WORKING PLAN

OF THE

DEOBAN RANGE, JAUNSAR FOREST DIVISION,

N.-W. PROVINCES.

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INTRODUCTION.

THE greatest difficulty in connection with this plan has been to work the forests in such a way as not to unduly interfere with the privileges of the villagers, and I may say that but for these privileges the whole programme of work would be greatly changed and forest produce could be delivered at Chakráta at cheaper rates.

In addition to the ordinary work connected with the preparation of a plan of this kind, all the cultivation in the 2nd-class forests had to be demarcated and chaks formed, whilst an enumeration of all the cattle, sheep and goats which graze in the forests was also made.

The following reports, &c., were of great service in the preparation of the plan :—

Preliminary Working Plan of the Deoban Working Circle, 1875-76 to 1877-78, by Sir D Brandis

Suggestions by Sir D Brandis, 1879 and 1881.

Settlement Reports of Jaunsár-Bawar.

Forest Conference Report, 1875, with paper on rights in Jaunsár, by Mr. Bagshawe.

Statement of forest rights in Jaunsár, by Colonel Bailey, R.E

Specification, Deoban sledge road, by Mr. Hobart-Hampden.

Note on the geology of Jaunsár by Mr R. D. Oldham.

Gazetteer, North-Western Provinces.

The Indian Forester

Annual Reports on Forest Administration, North-Western Provinces and Oudh,

Plantation Notes by forest students.

Office records.

I desire to express my thanks to Messrs Moir and Hobart-Hampden, the two officers in charge of the Division during the preparation of this plan, for the ready assistance they have given on every occasion.

I also wish to express my great pleasure at the energy and intelligence displayed by Forest Ranger Keshavanand whilst assisting me in this work. He has described all the compartments in the range and has prepared an excellent stock map, besides measuring the heights of numerous trees and making a good collection of rock specimens and plants.

GLOSSARY OF VERNACULAR TERMS USED IN THE TEXT

Amaltas	..	Cassia Fistula
Ayár	..	Pieris ovalifolia
Bahera		Terminalia belerica
Bákh		Anogeissus latifolia
Bán		Quercus incana
Bel		Ægle Marmelos
Bokain	.	Melia Azedarach
Chak	..	A demarcated piece of cultivation within forest limits
Chila		Cassia tomentosa.
Chír	...	Pinus longifolia
Dánda		A broad backed ridge
Debra	..	Elæodendron Roxburghii
Deodár	.	Cedrus Deodara
Deota	..	A temple.
Dhár		A ridge
Dhaura	..	Lagerstræmia parviflora.
Gád		A mountain stream.
Ginghár	.	Cratægus Pyracantha.
Gauj	...	Millettia auriculata.
Haldu		Adina cordifolia
Jáman	..	Eugenia jambolana.
Jíngan	..	Odina Wodier
Kail	..	Pinus excelsa
Kaim	.	Stephegyne parvifolia.
Kainth	...	Pyrus Pashia
Kandi		A basket
Karaunda		Carissa spinarum
Karshu	..	Quercus semecarpifolia.
Kat bhilawa	.	Buchanania latifolia
Kat bhoj	...	Betula acuminata
Khad	..	A ravine
Khair	.	Acacia Catechu.
Khat	.	A division of the pargana
Kokat	.	Inferior trees
Kuri		Nyctanthes Arbor tristis.
Láni	...	A mountain pass
Leuri	..	Cupressus torulosa.
Lod		Symplocos crataegoides.
Marorphal	...	Helicteres Isora
Maljan	..	Bauhinia Vahlii
Mendal	.	Randia dumetorum.
Morinda	..	Abies Pindrow
Moru	..	Quercus dilatata
Nala	...	A stream
Pargana	..	A division of a district
Pípal	..	Ficus religiosa
Rai	...	Abies Smithiana.
Rawanna	..	A permit.
Ringál	...	Small hill bamboo
Sain	..	Terminalia tomentosa.
Sál	...	Shorea robusta.
Sándan	.	Ougeinia dalbergioides
Shisham	...	Dalbergia sissoo
Siyána		Headman of khat or village
Soorkhi	...	Pulverised brick
Tach / Thát	...	Resting place for sheep
Tiba	.	A peak.
Tún	...	Cedrela Toona.
Wajib ul urz	..	Record of rights
Zamindár		Land holder

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* The working circles	1 inch=1 mile.
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Sheet No. I, Deoban working circle „ II. „ „ III. „ } also stock maps	4 inches=1 mile.
Bán coppice Kurwa, tracing	20 inches=1 mile.

* Bound up with the plan.

WORKING PLAN OF THE DEOBAN RANGE,

JAUNSÁR FOREST DIVISION,

N.-W. PROVINCES AND OUDH.

BENGAL SECRETARIAT LIBRARY.

By N. HEARLE,

Deputy Conservator of Forests, School Circle.

CHAPTER I.

Situation, Area, Boundaries and Climate.

1. The main object of the present working plan is to provide a permanent supply of fuel and timber for the cantonments of Chakráta, and consequently all forests within workable distance (about 10 miles for fuel and 13 miles for timber) have been included, as well as the Kálsi forest at the foot of the Himálaya, 27 miles from cantonments, but connected with them by a fine cart-road. These forests, which include the whole of the Deoban range, consist of—

		Acres
1 The Deoban forests to the north of and above Chakráta	...	24,513
2 The small detached oak forests south of Chakráta	...	775
3. The Kalsi forest at the junction of the Jumna and Tons	...	4,576
Total	...	29,864

and it is also proposed to lease and include in the range 1,585 acres of oak forest in the Chakrata cantonments.

Their boundaries are :—

(I)—Deoban Forests.

2 From pillar No. 34 at Morrow's Neck the boundary goes in a straight line to cantonment boundary pillar No. 142 and then follows a fire line to the Amlawa gád, which it meets at pillar No 36-1, and thence skirts the cultivation along the gád to pillar No. 4, whence it follows a grazing path to pillar No. 5, and thence by a line of pillars to pillar No. 101 on the J di road ; it then runs west along the Gobras dhár to pillar No 34 at Koni Láni. From this point it goes down the Dadiár dhár to the Amtiár gád, which it meets at pillar No. 38, and thence proceeds up that stream to pillar No 39, whence it returns by a line of pillars to the Jádi road at pillar No. 48, which it follows for a short distance to pillar No. 49, whence, in order to avoid the cultivation of the villages of Mangár and Jádi, it makes a considerable divergence to the north, the boundary being demarcated by a line of boundary pillars to pillar No 83, where it again meets the Jádi road, along which it continues to pillar No 84, and then once more makes a digression to the north, running up a small stream to pillar No. 85, and thence to pillar No. 87 on the main ridge, along which it continues to pillar No. 95 close to the junction of the roads from Jádi and Deoban. Shortly after passing pillar No. 97, it leaves this ridge to run south down a ridge on which the Lokandi deota is placed at pillar No. 99, and then runs south-west by a line of pillars above the cultivation of Adawa to pillar No 9 on the Boi khud, the numbering of the pillars having recommenced from pillar No. 104 From this point there is a line of pillars running in a northerly direction to pillar No. 19 on the Kawai nala, up which stream the boundary goes, to where it is crossed by the path to Moila, when it runs up a ridge to pillar No. 21 on the Gugat dhár, which it follows to pillar No. 23, and thence goes west along a line of pillars to No 6, the numbering having again been changed at No. 27 ; the boundary then skirts the cultivation of Mashak to pillar No. 50 on the Mashak gád, which stream it follows to pillar No. 51, and then goes up a fire line to pillar No. 20, after which it follows a line of boundary

pillars around the cultivation of Koti to a second fire line near pillar No. 7. It goes down this line to pillar No. 68 on the Khâni Pâni, up which it runs to pillar No. 74, thence by a line of boundary pillars north to pillar No. 93, and then east to pillar No. 16 on the Daura gâd, the numbering having been again changed at pillar No. 110 on the old Simla road. It follows the Daura gâd to its junction with the Gatai gâd, and runs up the latter for some distance, but finally leaves it, skirting the cultivation of Konain until it meets the Seli gâd at pillar No. 52, which stream it follows to pillar No. 53, whence there is a line of pillars to No. 1 on the ridge separating the Binâl from the Dhara gâd. The boundary then leaves the outer forest boundary, following that of the Pânikanâl and Karâmba blocks to pillar No. 36; thence it continues by a line of pillars, past the village of Khatwa, to the Hajawa gâd, which it meets at pillar No 1 and follows to its junction with the Khatwa gâd at No. 51. From this point there is a line of pillars westwards to No. 15 on the Jaboa gâd, down which the boundary runs to No. 14, and thence by a line of pillars around the cultivation of Baniâna to No. 34 on a tributary of the Binâr gâd. It follows this tributary and then the main gâd to No. 33, cutting across from this point to No. 32*b* on the Khatwa gâd, which stream it follows to No. 32. From this point there is a long line of pillars to No. 11 on the Tons road, which road forms the boundary as far as No. 12, when it descends to the Agar gâd at pillar No. 14 and follows that stream to the lower Mohna road, which it follows to pillar No. 16, and then goes down to the Khadânawa gâd at pillar 18. It follows this stream for a short distance to pillar No. 19, and returns by a line of boundary pillars to the road, which it again follows to pillar No. 27 at Gonakai. It then goes round Mohna 1 by a line of pillars to the Kotyura tiba, from which point it descends the ridge back again to pillar No. 34 at Morrow's Neck.

(2)—Oak forests south of Chakrata.

8. (*a*) *Raura.*—From pillar No. 1 on the Raura gâd up the Kandi dhâr to pillar No. 2 on the pathway from the rifle-range to Timara, then along this path to the Chopri dhâr at pillar No. 3, down that dhâr to pillar No. 4 on the Marawsa gâd, which the boundary follows to its junction with the Raura gâd, up which it returns to pillar No. 1.

(*b*) *Kua.*—From pillar No. 1 on the Mussoorie road down the Raura-Kua dhâr to pillar No. 2 at the junction of the Suri and Baghera khuds, then up the former to a bridge on the Mussoorie road at pillar No. 4, and thence up the khud to pillar No. 5 on the Pandah lâni dhâr, which the boundary follows to pillar No. 6, and thence returns to pillar No. 1.

(*c*) *Singhori.*—From pillar No. 1 on the crest of Lambi dhâr just below the Mussoorie road, the boundary goes down the crest of the dhâr for some distance and then down a small spur to Jâwâr that khud, along which it continues to pillar No. 2 and then runs by a line of pillars to pillar No. 5 on the Uperlagaitha dhâr, and up that dhâr to Runja timba, then along Runja timba to pillar No. 8 on the Mussoorie road, and along this road back to pillar No. 1.

(*d*) *Kurwa.*—From pillar No. 1 on the Tebya dhâr by a line of pillars to pillar No. 10 at the foot of the Simkuma dhâr, and up this ridge to pillar No. 12 on the Kandiah dânda, which it follows to the Tebya dhâr, down which it returns to pillar No. 1.

(*e*) *Bândla.*—From pillar No. 1 the boundary runs along a flat ridge bordering on some precipitous ground to pillar No. 4, whence it returns to No. 1 by a line of pillars.

(*f*) *Kota.*—The boundary between pillars 1 and 4 closely follows the watershed between the Jumna and Tons and from 4 to 6 a large spur running down to the Amlâwa. From pillar No. 6 it goes down a small ridge to pillar No. 7 and returns to No. 1 by a series of boundary pillars skirting the cultivation of Kota.

(3)—Kálsi (portion valued and described).

4 From pillar No 1 on the Jumna, a little east of the bridge, by a line of pillars around the cultivation of Haripur to No. 11, and then the boundary of the Tilwári camping-ground to No. 21. There is then a line of pillars crossing the Amláwa to 27; thence it runs up a small nala to a 2-feet cut line which it follows west to the Bana gád and continues up that stream to pillar No. 21. There is then a line of pillars to No. 26 on the Amláwa, down which stream it runs to No. 10, and then up a small ridge to the cart-road. It continues by a line of pillars above the road to No. 34, and then comes down a ridge to No. 7 of Khádar Khera and skirts this cultivation to No. 1 near the Tons. From this point the Tons and Jumna form the boundary back to pillar No. 1 near the bridge.

5. The length of boundaries is roughly estimated as follows, the number of pillars being also given :—

Name of forest.	Number of miles of outer boundary.		Number of miles of boundary of 1st class forests.		Number of pillars.		
	Artificial.	Natural.	Artificial.	Natural.	Outer boundary	1st class forests	Chaks.
Deoban forests	47½	30½	8½	6½	514	101	321
Oak forests below Chakráta ...	7	7	...	...	62	...	9
Kálsi forest (portion valued) ...	9½	5	...	...	60	...	31
Total ...	64	42½	8½	6½	636	101	361

The cantonment forests are all included within the cantonment boundary, which is well defined by a cut line.

6. *Changes in the outer boundary.*—Many changes have been made in the outer boundary in connection with the preparation of this working plan usually in order to exclude patches of cultivation; but the largest area has been abandoned in the Chátri block in order to open out the large village of Koti, which was previously surrounded by Government forests. Altogether 887 acres have been excluded from the area under forest management, consisting mostly of grazing lands or of ground containing scattered plots of cultivation. All these changes are shown in a tabular form in Appendix F.

7. The small detached forest of Mogad, covering 117 acres in khats Bamtár and Dissau, was considered not worth retaining, and by G. O. No. $\frac{347}{4057}$F., dated the 1st July, 1886, it was constituted a village forest, the first in these Provinces; the area of the forest in khat Bamtár being assigned to the village of Lurli and that in khat Dissau to the village of Haja.

8. *Climate.*—Full particulars concerning the climate of these hills in general has been given by Mr. Fernandez in his working plan of the Mundáli forest of this Division, to which reference is invited. It is only necessary to say here that the statement made in paragraph 28 of that plan, to the effect that the frost which occurs in October and November is not dangerous to vegetable life, appears to require modification. It has been found necessary to protect young deodár and other seedlings growing in nurseries from its effect by means of shades formed of ringáls and grass raised two or three feet from the ground, and the neglect of this precaution last year in the nursery close to the Bodiár bungalow was, doubtless, the reason why so many of the seedlings died. It was found that the frost was so severe in the valleys and hollows at Bodiár that nurseries which were formed there had to be abandoned.

Within the Deoban range forest areas were taken up in 15 khats, *viz.* :—

	Square miles.	*Acres.*
1st-class forests (Bodiár, Kanásar, and Konain)	3	245
2nd-class forests	42	619

For details *vide* Appendix B.

In addition to this, the cantonment of Chakráta, which has an area of about 4,000 acres, is equivalent to 1st class forest, as far as the villagers are concerned.

12. The Indian Forest Act appeared in 1878, and it having been then assumed that the enquiry prescribed in section 34 of the Act had been made, the 1st and 2nd class Government forests were gazetted as "reserved" under that section (see G. O. No. 408A., dated 1st August, 1878).

13. In 1881 the khat boundaries within 1st and 2nd class forests were entered on the map and have been checked by Mr. Litchfield in the doubtful cases; it is believed that they are now quite accurate.

14. *Provision for closing 2nd-class forest.*—Should the Forest Officer at any time wish to close any portion of 2nd-class forest and make it 1st class, he must give a month's notice through the Superintendent of the Dún and leave the villagers sufficient forest for their use. If they deem the forest so left insufficient, or that remote forests only have been left open, they can apply to the Superintendent to get just arrangements made for grazing, &c. So long as such 2nd-class forests are closed, they can be treated precisely as 1st-class forests; but they differ from the latter in this respect, that they are only closed temporarily to admit of reproduction. As soon as they are sufficiently grown up to admit of their being grazed over without risk, they will be opened and other areas of 2nd-class forest will be closed.

15. *Limitation of privileges.*—In the new settlement of 1883-84 by Mr. Ross, arrangements were made by which the forest rules, where they pressed hardly, were relaxed and provision was made for the requirements at Chakráta for fuel and proper forest conservancy, without undue or unnecessary restrictions of the privileges of the villagers. With the exception of building timber and of special cases, where it has been recorded that the inhabitants of one khat have the right to graze their flocks in a forest which originally belonged to some other khat, these privileges only exist in each khat in that portion of the 2nd-class forests which was originally contained within the boundary of that khat, but within that portion all villagers of the khat possess rights. The privileges of grazing, cutting leaves and grass for fodder, collecting leaves for manure and wood for fuel, are still nearly unlimited; but if their gradual curtailment and definition be kept in view, it is hoped they will be exercised with the least possible damage to the forest growth. Mr. Ross, the Superintendent of the Dún, and Mr. Cornwall, the Settlement Officer in 1873, carefully provided in the record-of-rights for the gradual definition of all rights in the forest.

The different forest privileges.—The different forest privileges will now be treated of in detail.

16. (1) *Timber.*—Before 1870, the people both of the hills and the neighbouring country below were in the habit of cutting and carrying away deodár and whatever wood they pleased to a very large extent, and some of the forests, as Mashak and Bodiár, were very heavily worked for this purpose, to the great profit of the neighbouring zamíndárs, as those who came from below had to pay something (though it was a trifle) to the siyána and to the zamíndárs on whose lands they cut the wood.

When the settlement of Jaunsár was made in 1870-73, the forests had been so recently demarcated, and the people were so upset at the idea of being forbidden to

go into certain forests where formerly they grazed and cut as they pleased that it was deemed impolitic to limit their privileges beyond merely recording that the privilege-holders were to have a sufficiency of each article; but as deodár timber was scarce and valuable, to prevent waste, a saving clause was inserted in the 'wajib-ul-urz' to the effect that deodár timber must be converted *by saw* and not by axe. Subsequently it was attempted to define the rights of villagers to timber more clearly by endeavouring to induce them to accept a given number of deodár trees per annum in place of a sufficiency." Mainly owing to the efforts of Mr. Bagshawe all the siyánas consented after some time, provided that they were allowed to convert their trees with *the axe* according to their "ma-bap-ka-dastur." This annual grant of trees was then sanctioned by G. O. No 21 of 9th January, 1879. The annual demand thus thrown on the Deoban range is as follows (for free particulars of the grant to each khat *vide* Appendix C) :—

	No.
Green deodár over 6 feet in girth	98
Dry pieces of deodár if available from the forest	4,650
Spruces and silver fir	140
Blue pine	29
Chír	8
Leuri (cypress)	2
Moru oak	117
Bán oak	148
Haldu	32
Sál	48
Saín	70
Bákli	60
Rokain	50
Sándan	136
Singor	50
Khair	38
Bamboos	900
Ringáls	1,700
Loads of torchwood (jogan)	2,040

The Jaunsáris are very particular about their houses: they all have double-storied houses, and in many instances three and four stories. In the lower khats the wood work is deodar procured from the higher khats, but the covering is slate; in the upper khats the roof is usually deodár, split planks being used. In the upper khats, people say, there is no slate, but the reason probably often is that it is easier for the people to split deodár than to quarry slate, for which hitherto, owing to the ample supply of deodár, there has been no incentive to look.

17. (2) *Fuel.*—The villagers have the right of taking dry wood for fuel for their own use from the 2nd-class forests.

18. (3) *Grazing.*—It has been mentioned that the villagers have a general right of grazing in the 2nd-class forests of their khats, and in certain specified instances in similar forests of other khats, but that the forest officer, with the sanction of the Superintendent of the Dún, has the power of closing some of those forests until reproduction is ensured. Connected with this is the burning of grassy slopes within the forest area which has been placed under the control of the Forest Department. This control gives the forest officer considerable influence with the villagers who are always allowed to burn such slopes where no damage can be done to the forest, whenever they ask permission, provided they have been observant of the forest rules. The villagers are responsible for any fire which may occur in 2nd-class forests protected from fire, but open to grazing, and should a fire take place and they cannot prove that it was caused by villagers from another khat, they are liable to a fine.

The responsibility of protecting the forests against the straying of cattle when going in exercise of any right through 1st class or closed 2nd class forests to water,

cultivation, or grazing, rests with the Forest Department, as also does the responsibility of fencing such portions of such forest as run into the village cultivation, so as to render it difficult for the villagers not to prevent trespass of cattle.

The domestic cattle are of the small black and red short-legged breed found throughout the hills and are inferior to the plains cattle in size, strength, and as milch-cattle. They have increased very considerably of late, as the following figures will show, and from them it does not seem that forest conservancy has too greatly restricted the grazing areas:—

Year.	Horned cattle.	Sheep and goats.
1848	7,480	28,460
1850	10,870	27,200
1860	32,300	50,100
1883	35,270	54,860

In fixing the revenue under the late settlement, cows, bullocks, and buffaloes have been assessed at one anna per head and sheep and goats at a quarter of an anna each, but none of this revenue is credited to 'forests.'

The number of domestic animals which actually graze in the forests of the Deoban range is—

Buffaloes	152
Cows and bullocks	8,605
Sheep	10,137
Goats	10,671
Total ...	29,565

Appendix J gives full particulars of the number for each village and of the names of the forests in which they graze.

19. (4) *Lopping.*—In 2nd-class forests the villagers can cut leaves for their sheep with the permission of the forest officer. As this lopping is only, therefore, allowed with the permission of the forest officer, that officer can clearly make rules for its regulation. In fact, in the wajib-ul-arz of all the khats except Barasuwa, Birmau, Udpálta, Semálta, Seligothán, and Haripúr Biás, it is expressly laid down that no branches are to be cut over one inch in diameter and that no trees under 15 feet in height shall be lopped.

20. (5) *Removing dead leaves.*—In 2nd-class forests the villagers have the right of collecting fallen leaves under the trees for manure.

21. (6) *Building stone.*—The villagers possess the right of quarrying in 2nd-class forests.

22. (7) *Ringáls.*—They have the right of cutting ringáls for their own use in 2nd-class forests and of selling them from the forests of the 3rd-class.

23. (8) *Trees for hedging purposes.*—With the permission of the forest officer they can cut trees such as ginghar (*Cratægus Pyracantha*), kaith, lod (*Symplocos sp.*), ampar and mekh for hedging purposes.

24. (9) *Cultivation.*—In 1st-class forests all cultivated land was taken up under the Land Acquisition Act and full compensation paid to the villagers. In nearly all 2nd-class forests there are numerous cultivated patches which the villagers have a right to cultivate if such fields are entered in the assessment lists, and a margin of 20 feet is allowed around such fields where the owner has a right to lop trees which overshadow his crops. If any zamíndár wishes to break up new land in a 2nd-class forest within his khat, he must, before doing so, obtain

the permission of the forest officer as regards the quantity of land, the position of the field, and the period for which it is to be cultivated; and he shall also pay such revenue as may be fixed by the Superintendent of the Dún. After the expiry of this term he must get fresh permission; if he does not get it he must relinquish the field, and under no circumstances can he acquire any right whatever in it.

25. (10) *Rights to water and rights of way.*—The villagers possess the same right over the water which flows through the 2nd-class forests as they have hitherto enjoyed, and the rights of way to such water also remains intact.

26. (11) *Fishing.*—The villagers have the right to fish three times a year by poisoning and throughout the year by rod and line; they can also fish with nets in the larger rivers as the Jumna, Tons, and Amláwa, but not in the small streams.

27. *Special privileges of certain khats in the Deoban range.*—The above privileges are common to the whole of Jaunsár and vary but little for the different khats. In the Deoban range the principal variations are:—

Haripár Bára.—The owners of such mango trees as have been included in the Government forest are entitled to their fruit, and the zamíndárs are entitled to the fruit of mango trees without owners. Like the zamíndárs, Shibbu, Mahájan, and Shibgir Faqír, have a claim to the fruit of such of their mango trees as have been included within the Government forest Shankar Das or any other person cannot cut these trees or sell them, neither can he cultivate the land under them or plant new trees in it. He cannot cut dry trees, the Forest Department alone having the right to do so. No list of free-grant trees has been given in the wajib ul-arz for this khat, although the grant was sanctioned by G. O. No. 643 of the 9th July, 1883.

Panjgáon.—The zamíndárs of the Seligothán, Phirtár, and Bána khats are allowed, as in times past, to take grass, fuel, and leaves for their sheep and goats without payment. Those also who are accustomed to graze their sheep and goats in this khat, can continue doing so without payment, provided that they bring these animals in the morning and take them away in the evening; but if they erect any sheds within the khat for their sheep, goats, or cattle, the zamíndárs of the khat will be entitled to levy grazing dues from them. (These dues, of course, could only be levied for grazing in village lands.)

All land along the banks of the Jumna to the foot of the hill and 20 feet up the hillside is the property of Government; but any cultivation which has been surveyed and situated within this portion of the Government forest shall continue to be cultivated, and the zamíndars shall also own a strip of land 20 feet wide around such cultivation. Any planted trees are also the property of zamíndárs, be they ever so near the river.

Bána.—The land along the Tons is subjected to the same rules as that along the Jumna (*vide* preceding khat), but the strip of Government forest extends 30 feet up the slope instead of 20 feet as in the former case.

Seli.—The zamíndárs of khats Dissau and Bamtár have the right to get dry wood for fuel, grass, leaves for their sheep and goats and to graze these animals as well as their cattle in the forests of this khat on the conditions mentioned under Panjgáon.

Kóru.—The zamíndárs of khats Seligothan and Bhailar have similar privileges in the forests of this khat. It is mentioned in the wajib-ul-arz that there is no need for marking kokat trees given in the annual grant, although this khat was included amongst those in which such trees had to be marked—*vide* joint memorandum by Messrs. Ross, Baker, and Fisher.

Silgáon.—The zamíndárs of khats Athgáon, Bissáhil, Bána, Udpálta, and Semálta are entitled to the same privileges in the forests of this khat as the zamíndárs of Dissau and Bamtár in Seli, and there is a strip of Government forest along the Tons as in Bána.

Athgáon Chándu.—The zamíndárs of khats Silgáon, Maleta, and Bamtár have the same privileges in the forests of this khat as the zamíndárs of Dissau and Bamtár in Seli.

Bamtár.—The zamíndárs of khats Kothi, Dissaú, Dhanau, Birmau, and Udpálta have similar privileges in the forests of this khat. In the 'wajib-ul-urz' it is stated that no portion of the 2nd-class forest is *worth* closing !! and the forest officers cannot close any portion without opening an equal portion of 2nd-class forest for the use of the khat.

Barasuwa.—There is no Government forest in this khat.

Mohna and Dwár.—No more 2nd-class forest can be closed unless a corresponding portion be re-opened.

Bislár.—The zamíndárs of khats Baunder, Athgáon, Uperli, Báwar, Dwár, and Kailo have similar privileges in the forests of this khat to those possessed by Dissau and Bamtár in Seli.

Kailo.—The zamíndárs of khats Missáu and Lakhau have similar privileges in the forests of this khat.

Missáu.—No more 2nd-class forest can be closed in this khat unless a corresponding portion be re-opened.

Bharam.—The same rule as in other khats regarding the bank of the Tons. The zamíndárs of khat Missáu have the same privileges in this khat as those of Dissau and Bamtár in Seli.

Dhanau.—The zamíndárs of khat Dissau and Bamtár have similar privileges in this khat.

Dissau.—The zamíndárs of khat Bamtár, Koti, and Dhanau have similar privileges in this khat.

Dwár.—The proposal made by Mr. Bagshawe to set aside the deodár trees growing near Baniána village for the sole benefit of this khat, and that they are not to be used for any Government purpose, was sanctioned by Superintendent of the Dún's No. 85, dated 25th December, 1875.

28 *Steps taken by the Forest Department to provide for and to regulate the various forest privileges.*—Having summarized above the forest privileges of the villagers as they are laid down in the settlement papers, it now remains to state what steps have been taken by the Forest Department to provide for and to regulate them.

(1) The rights to free-grant timber cannot accumulate nor can the wood be sold. No zamíndár can sell any wood or tree of any kind to any person, such as contractor or inhabitant of Chakráta, or to the servants of Public Works or Commissariat Department or any other outsider. The zamíndárs cannot even sell amongst themselves such trees as are self-grown, but they can give them to people of another khat for nothing, or in lieu of something received from them. The sale of trees planted by the vendors is permissible to inhabitants of the pargana. The proposals contained in the joint memorandum on forest rights in Jaunsár Báwar by Mr. Ross, C.S. Mr. Baker, C.S., and Mr. Fisher, Officiating Conservator of Forests, dated January, 1885 (Appendix G), were sanctioned by G. O. No. $\frac{2F}{3x-11}$ of 15th January, 1885. As regards timber the proposals were :—

(2) In 2nd-class forests the villagers may generally cut their annual allotment of inferior trees, according to the list given in the record-of-rights, where and when they like; but in 13 khats near Chakráta, as per list in the margin, all right-holders' trees shall be marked in October by the Divisional Forest Officer or by his orders, and removed by the villagers whenever they like, within a period of 12 months. In case any marked trees have not been removed within this period, they will be counted again towards the next year's annual grant.

1. Diasau.
2. Dhausu.
3. Kailo
4. Lakhan.
5. Bislár.
6. Dwar.
7. Mohna.
8. Barasuwa.
9. Bangáon.
10. Baintár.
11. Seli.
12. Kóru.
13. Misáu.

2. For right-holders, deodár, pines and firs, which may be classed as valuable timber, will be marked in October in all the khats by the Divisional Forest Officer or by his orders. No unmarked and valuable timber may be removed by a right-holder.

(3) All deodár trees given to right-holders must be sawn up and not cut into planks with the axe.

(4) Villagers have no rights whatever in 1st-class reserves, and at present there is an ample supply of deodár in 2nd-class reserves, where the deodár trees for the right-holders will be marked exclusively. It will be the duty of the Forest Department to work the 2nd-class reserves in such a way that the annual supply of right-holders' deodár may be maintained.

The orders contained in paragraph 3 regarding the use of the saw instead of the axe caused, as anticipated, a good deal of dissatisfaction amongst certain of the more backward and remote khats, and in consequence only 18 out of the 39 khats removed their timber during 1885-86. The enforcement of this rule has since been deferred for two years in order to allow the villagers time to adapt themselves to the change. Even, however, when the axe was allowed, the quantity of timber removed was frequently under the amount to which the people were entitled. The cause of this may be that the quantity entered in the agreements is greater than that which the people really require, or it may be due in any particular year to a scarcity of food which renders it difficult for them to remove the produce.

In case any khats require more deodár trees than they are entitled to receive, Mr. Moir prepared in 1885 a list of rates, which are very moderate, showing the amount to be paid for such trees, the purchaser having no right to resell them :—

Girth.	Rates.	Remarks.
Feet.	Rs.	
6 ...	3	Not more than three trees to be sold to any one khat in one year. To be given only from distant 2nd-class forests not wanted for Chakráta; trees sold to be cut with the axe or saw, as the purchaser chooses, and to be marked with the sale mark, as also must be the planks prepared.
7 ...	3	
8 ...	4	
9 ...	6	
10 ...	8	
11 and 12 ...	10	
Over 12 ...	15	

The rates for dry pieces to be four annas per cooly-load and no khat to purchase more than 100 such pieces in any one year.

29. *Closing 2nd-class forests.*—Of the 2nd-class forests in the working circle, the following statement shows the forests open and closed :—

Block.	Area open.	Area closed.	Date of closing.	Sanction for closing.
	Acres.	Acres.	Year.	
Inári	502	...	...	
Moila	1,200	...	...	
Missáu	1,527	...	...	
Chátri	586	...	...	
Kopti	202	204	1879	Superintendent of Dún's No. 341 of 2nd June, 1880.
Asmári	380	...	...	
Marauwa	640	...	...	
Thona	...	461	1878	Ditto ditto.
Kutniár	271	...	...	
Kanjátra	...	643	1879	Ditto ditto.
Jádi	879	58	...	Superintendent's No. 347 of 3rd June, 1880.
Darna	726	...	...	
Matkángra	249	437	1874	
Mohna	400	671	1869	Superintendent's No. 340 of 2nd June, 1880.
Duréni	881	...	...	
Ekra	1,026	...	...	
Kulered	595	...	...	
Amlokri	518	...	...	
Dánda	237	...	...	
Hajawa	590	451	1879	
Duliána	815	...	...	
Pandawa	404	...	...	
Rikta	536	...	...	
Bajamára	108	318	1879	
Legúna	882	42		
Oak forests south of Chakráta ..	645	130	1881	Superintendent's No. $\frac{289}{IV.A-106}$ of 8th December, 1881.
Kálsi forests	4,496	80	1888	Superintendent's No. — of 1888.
Karáli	589	...	...	
Siári	418	18	...	
Gutugád	518	...	...	
Bhujkoti	330	...	...	
Pani-ka-nal	891	...	...	
Karámba	105	2,045	...	
Total ...	22,136	5,558	...	

In Matkángra, compartment 4, between the Jádi and Deoban roads, and a portion of compartment 3, the animals belonging to the fuel-carrying contractors are allowed to graze.

From the closed portions must, however, be deducted the following areas which have been opened departmentally, but which can be reclosed, without further reference to be Superintendent of the Dún :—

	Acres.
Thona (part of)—Situated between the Missáu and Bodiár roads, bounded on the east by the Bari dhár, and on the west by a small khad and a 2-feet path near the old cholera camp, together with a small strip below the Missau road, to give the villagers access to Thona páni, sanctioned by Conservator's No. 44 of 7th June, 1883. High-level grazing-ground for villagers of Koti, Tiúna, and Mangtár	211
Karamba (part of)—Sanctioned by Conservator's No. 63 of 10th August, 1881	1,300
Konain (part of)—Compartments 1, 3, 6, and 8 in the 1st-class forest, aggregating 134 acres, opened since 1875 to horned cattle of Konain village, but only sanctioned by Conservator's No. $\frac{46}{37}$ of 13th June, 1883 ...	134
Total ...	1,645

Thus only six square miles, or less than one-seventh of the Deoban range, have been closed to grazing. In the joint memorandum by Messrs. Ross, Baker, and Fisher previously referred to, paragraph 6 states that, in consequence of the large areas of 2nd-class forest which have been closed in the vicinity of Chakráta, it is expedient

that in future no further area should be closed, unless a corresponding area is opened in which reproduction has been effected and in which the young growth is no longer in danger of serious injury by cattle and sheep. In order that the villagers may not be unduly inconvenienced by this practice, the consent of the Superintendent of the Dún should be obtained, and any case of difference of opinion between the Conservator of Forests and the Superintendent of the Dún should be referred for decision to Government. Mr. Ross in his late settlement report says: "The following are the khats close to Chakráta from which, in my opinion, no more grazing can be taken:—Dhanau, Missáu, Mohna, Bamtár, and Dwár. In neither Mohna nor Bamtár is there any more forest which under any circumstances could be closed, but in Dhanau and Missáu there is there a good deal of forest which could be closed if a corresponding area was opened in a suitable locality. In Dwár it is possible that exchanges might be made, but not much. Kailo is the next nearest khat to Chakráta; from it a good deal of land has been taken already, and it is hampered by having 1st-class forest close to its principal village, but still I think it possible that more forest could be taken up in it. I think the Forest Department should have no difficulty, by judiciously re-opening forests where possible, in closing at one time or another every acre of forest near Chakráta." The closing affects privileges Nos. (2), (3), (4), (5), (7) and 8) of paras. 16-26, but cultivation is not interfered with. An excellent plan has been adopted for marking off the open and closed areas on the ground, the boundaries between the two portions being indicated by posts bearing boards colored red towards the closed and black towards the open side. Such posts serve as a guide to shepherds and others.

30. *Privilege No.* (4), *Lopping.*—This has hitherto been permitted by the forest officer in all open 2nd-class forests; but Mr. Smythies established a rule by which no trees under four feet in girth were to be lopped and that no branches over six inches in girth were to be cut. In 1885 Mr. Moir, the forest officer in charge, in consultation with Mr. Ross, prepared the following rules:—

(1) No tree under three inches in girth or one inch in diameter shall be lopped.

(2) No branches or twigs over three inches in girth or one inch in diameter to be cut.

(3) Trees shall only be lopped once in three years.

At Kurwa, the villagers are now allowed to remove all the small twigs from the trees felled for coppicing, and as the area coppiced is annually about three acres, this affords a considerable quantity of fodder for winter use; but they have abused the privilege by lopping some of the standards left in the coppice.

31 *Privilege No.* (5), *Removing dead leaves.*—This is not permitted in closed 2nd-class forests except at Kurwa, where annual permission, which can of course be withdrawn, is given to remove leaves from certain of the coppice compartments; and Mr. Moir suggests that it should be restricted there to 300 'kandies' full per annum, or that half the forest should be opened only each alternate year.

32. *Privilege No.* (9), *Cultivation.*—Since the demarcation, owing to the difficulty of supervision, and perhaps also to venality on the part of forest guards, numerous fresh patches of cultivation have been made without sanction, and no steps were taken to effectually check this inveterate custom of hill races until this working plan was begun. All cultivation assessed to revenue in the forests of the range has been visited by me, the patwáris being present with their maps. Where possible, the outer boundary was altered so as to exclude such cultivation; but where this was not feasible, a 'chak' was formed by means of pillars, which will be connected with each other, where the boundary is an artificial one, by means of cut lines. It was necessary of course, owing to the scattered position of the cultivated plots, to sacrifice pieces of forest in order to form a workable boundary; so that altogether these chaks occupy 712 acres, and all of them have been entered on the maps. A list of these chaks is given in Appendix L.

In some instances it is proposed to make exchanges or to purchase fields, and these unsettled cases are discussed in paragraph 190 of Chapter IX, 'The Working Plan.'

All the chak pillars near Konain and Baniána have been built, but the building of those about Deoban and in Lokandi has been delayed for want of lime. This is now ready and the work will soon be finished. The Ranger has been ordered to peg out the cut lines wherever necessary in places where they have not yet been dug.

33. *Privilege No.* (10), *Rights to water and rights of way.*—In 1881, the lists given in Appendix K. of all springs and watering-places to which villagers have a right of access in 1st-class and closed 2nd-class forests in the Deoban range, as well as lists of rights of way to cultivation, grazing-grounds or otherwise, were prepared by the forest officer and sanctioned by the Superintendent of the Dún in his No. 756—1VA-106, dated 5th of April, 1882.

In Kanásar, the people of Koti and neighbourhood are allowed once a year on a certain date to take their sheep and goats for one night only to a small temple near the forest hut in the 1st-class forest. This is a religious ceremony.

34. Privileges Nos. (2), (6), (7), (8), and (11) have not been regulated in any way.

CHAPTER III.

Configuration, Rock and Soil.

Configuration of the forests.

35. *The Deoban forests.*—The forests included in the Deoban range to the north of Chakráta are divided into two parts by a prominent ridge which forms the watershed line between the Jumna and Tons. This ridge, after rising from the junction of the two rivers, enters these forests at pillar No. 7 in the Darna block, where it has an altitude of about 7,700 feet. Thence it rises rather abruptly to Chakráta View, 9,331 feet, running from this point in a north-easterly direction, the altitude varying only a few hundred feet up to the Karámba peak, 10,075 feet, the highest point in Jaunsár and also the eastern limit of the range. The slopes on the northern flank of the ridge occupy most of the wooded parts of the upper basins of the Binál gád with its large tributaries, the Shili, Mashak, and Ghárawah gáds, the Amtiár gád, the Jumrád gád, and two smaller tributaries of the Tons in the extreme west, whilst those on the southern flank occupy the wooded slopes at the head-waters of the Amláwa and Khutnu gáds, tributaries of the Jumna, with the exception of the Khársi and Punáha blocks, which form part of the Báwar range From Snow View a prominent spur runs westwards to Moila Temple, 9,058 feet, its lowest point being at Lokandi Láni, 8,340 feet. The whole area is broken up by numerous secondary spurs (offshoots of the two main ridges) which again sub-divide, and it is furrowed by a great number of tributaries of the streams mentioned above, each of these being in its turn fed by a number of smaller nalas, most of which have running water in them only in the rains.

There are large areas of precipitous and rocky ground, much of which is unworkable, over 3,000 acres having been classed as unproductive on this account (*vide* Appendix D). They are found principally at southerly, south-easterly, and south-westerly aspects in Inári, Marauwa, Kutniár, Jádi, Darna, Matkángra, Mohna, Duráni, Ekra, Kulered, Amlokri (compartment 3), Rikta and Legúna (mostly compartment 1), and there are, besides, smaller unproductive areas in nearly all the other blocks. Darna 4 and Duliána 4 were excluded from the valuation survey on account of their worthlessness, but the few trees dotted about on the other precipitous ground mentioned above have been enumerated. At such aspects the slopes are as a rule rugged and precipitous, the limestone rocks often forming very conspicuous cliffs, as in the higher part of the Inári block, along the Duráni dhár in Kutniár, along the main

ridge from Darna láni to Chakráta View, at the boar garden khad in Matkángra, along the Hajáwa and Moti dhárs, there being at the latter locality, in the Duliána block, a tremendous cliff, several hundred feet high, which towers above the slopes below, and in the higher part of Rikta. In the Moila block, at a westerly aspect, there is a line of stupendous limestone cliffs along the main dhár, with two similar walls branching off from it, and there are smaller cliffs forming ledges in the upper parts of the Bajamára and Legúna blocks. The rest of the area at more or less southerly aspects, though workable, is nevertheless usually very steep and often rocky and rugged.

Precipitous ground is also not wanting at more or less northerly aspects: for example, in the higher portion of the Missau block above the Simla road, where limestone cliffs are very prominent, in most places along the main ridge, and in parts of the Darna, Dáuda, and Bajamára blocks. The majority of the slopes at this aspect are, however, fairly moderate and frequently even: *e. g.*, large areas in Missáu, Chátri, Hajáwa, Duliána, and Pandáwa blocks, also Kopti 3 and 4, extending down the Marauwa block to a short distance below Chaina chak, parts of Kanjátra about Kabátra, &c., Jádi 7, northern parts of Mohna, Duráni, Dánda 1, part of Kulered above the Binár gád, and most of the northerly slopes in Legúna, Konain, Karáli (upper part), Siári, Gutugád, Bhujkoti, and Karamba. On such slopes most of the dhárs are flat-topped, sloping down gently to the streams, *e. g.*, Auni and Matuli dhárs in Missáu, the spurs on the right flank of the Duráni dhár, the Bari dhár in Kanjátra, the spurs on either side of the upper portion of the Tika dhár in Konain, and the minor spurs generally in Duliána 1 and 2, Kopti 3 and 4, in Pandawa and in the part of Karáli above the fire line. It is on such ground that we find shallow water-courses, whereas elsewhere the sides of nalas are usually steep, especially at southerly aspects, and are not unfrequently precipitous, as along the Paniawa and Marauwa gáds in Kanjátra, along the Seli nau and the Biti gád in Matkángra, and in many places along the Hajáwa gád and its feeders.

The dhárs exposed to the warmer aspects are usually sharp-edged, steep and often rugged, as are also many on northerly slopes. The top of the great western spur near Moila temple for an average width of ten chains is nearly flat or has very gentle slopes, whilst similar ground, but of less width, occurs along the main ridge near Snow View.

The gradient usually varies from 30 to 45 degrees and over, but gentler slopes from 15 to 30 degrees are occasionally met with, as over some of the northerly slopes referred to above.

The configuration of the Bodiár block is peculiar, as it is surrounded on the north, north-west, and south-east by high ridges, and there are also other prominent ridges along or near its south-western boundary, so that the central portion lies in a hollow which one might imagine to have been the bed of an old lake; a similar hollow, but in miniature, occurs in the Kanásar block.

Owing to the limestone formation, landships are rare and perennial springs and nalas are not very numerous, *e.g.*, in the Bodiár block there are only two perennial springs, both close to the bungalow, but the larger streams always have running water in their lower course.

36. *Cantonment and outlying oak forests.*—In these forests, which lie between 5,200 and 7,300 feet, there is very little rugged or precipitous ground and only 27 acres in Bándla can be classed as unproductive. The gradients vary from 20 to 45 degrees and are, on the whole, less than in the upper forests.

37. *Kálsi forest.*—That portion of the Kálsi forest which has been described occupies the ground at the junction of the Jumna and Tons and is divided into two portions by the Amláwa, which, rising above Chakráta, enters the Jumna at this point,

Between this stream and the Tons there is the isolated Haripur ridge, the top of which and of its chief spur is broad and more or less flat, with gentle slopes for a short distance on each side, which become steeper lower down until the level ground at the foot of the hills is reached. Some of this flat land is included within forest limits, such as a large piece near the Tons and smaller patches along the cart-road, whilst there is a high bank along the river.

Across the Amláwa most of the ground is hilly, with a small area of very gently sloping ground or 'chaor' at the foot of the hill in the south and a detached hillock between it and the stream. In the south there is a high bank along the Amláwa, and higher up, immediately above the stream, there is a large area of very precipitous ground full of landslips; but above this, as also in the hilly ground above the chaor, the slopes are fairly even and moderate except in the extreme north, where they are very steep. Landslips are of common occurrence.

With the exception of the precipitous ground, the hilly parts have slopes with gradients varying between 20 and 45, but usually about 30 degrees. There are 140 acres of unproductive ground occupying the whole of Barabágh 4.

The altitude varies from 1,500 feet at the junction of the two rivers to about 3,200 feet at the highest part of the hilly ground.

Geology of the District.

38. The geology of Jaunsár, has been discussed by Mr. R D. Oldham in a note contained in the Records of the Geological Survey of India, Volume XVI., Part 4, 1883, from which the following particulars connected with the Deoban range have been extracted:—

39. "*The Chakráta series.*—The oldest formation in Jaunsár, provisionally called the Chakráta series, consists of grey slates and quartzites, underlaid by a band of limestone generally some 300 or 400 feet thick, which is again underlaid by a great series of slates and quartzites marked by the prevalence of red and mottled beds. The principal exposures of the limestone lie in a zone running about east and west and pass immediately to the south of the station of Chakráta; to the north of this zone the hills are formed of the underlying red Chakráta slates and quartzites, while to the south the upper grey slates are exposed, notwithstanding the prevailing northerly dip of the beds. This is but part of the great Himálayan puzzle, that newer beds almost always seem to dip under older, that faults are generally reversed, and that the dip of the beds in their neighborhood is precisely the reverse of what would be expected on *a priori* grounds. The total thickness of these beds is undeterminable, partly on account of their intense disturbance and partly from the fact that neither their base nor summit has been seen, but it must amount to many thousands of feet.

"In northern Jaunsár there is another exposure of the same beds intersected by a great fault which, first appearing from underneath the Deoban limestone near the village of Konain, runs north-westerly to Mudhaul on the west of the Tons.

"In several parts of Jaunsár volcanic beds are exposed in the Chakráta series which promise to be of great value in tracing out the geology of the lower Himálayas.

40. "*The Deoban series.*—Overlying the Chakráta series comes a great thickness of limestones and dolomites so similar to the Krol series as to be almsot certainly contemporaneous with it, but which, as its relation to the underlying beds is very different to what has been described on the Simla section, will be provisionally called the Deoban series. Lithologically it consists of a great thickness of bluish-grey bedded limestones, some of the beds, as on the ascent from Deoban to Chakráta, containing many nodules of chert; others, which are generally mephitic, have a peculiar pisolitic structure, being composed of small round black nodules cemented

by a white calcareous matrix. A peculiar structure in some of the beds makes them resemble an accumulation of some closely-chambered shells imbedded in a matrix of calcareous mud, and so organic-looking that it is difficult to believe that they are not obscured fossils. A very considerable proportion of the beds is in some of the sections dolomitic, varying from a slightly magnesian limestone to a pure pale-grey crystalline dolomite. Interstratified with these calcareous beds is a varying proportion of slaty beds, occasionally colored, but as a rule grey.

"This series is quite unconformable to the underlying Chakráta beds, as is proved by its unconformably overlapping or overstepping their eroded edges. This is very well seen near Konain, where the Deoban lies on the Chakráta limestone, while, as the boundary is traced to the west, it is seen to rest successively on a (locally) descending series of slates.

41. "*The Mundáli series.*—Above the Deoban limestone comes a series of beds mostly conglomeratic, first identified by me in the neighborhood of the Mundáli forest bungalow, after which it is proposed to call them, at any rate provisionally They consist of conglomerates mostly with a slaty matrix, through which pebbles of quartzite, slate, or limestone are scattered, though some, and in Southern Jaunsár the majority, of the beds are not conglomeratic at all; others are colored slates, not unlike indurated Sírmúrs, and others again are calcareous. Of the latter some are fine-grained limestones; others, though this I have only seen near Mandáli, are limestone conglomerates cemented by a limestone matrix. The presence of these pebbles derived from the underlying Deoban limestone is sufficient to stamp the beds containing them as unconformable to it. In Southern Jaunsár, in addition to the Jaunsár conglomerate with slaty matrix, which is not found in every exposure, the characteristic rock is a quartz grit containing fragments of indurated red slate from the lower Chakráta beds.

"The facies of the Mundális is essentially littoral or shallow water, as is testified by their coarseness of grain, while the conglomerates with a slaty matrix, so similar to those of the Blaini age, could not have been formed except through the agency of floating ice; but it is not a little remarkable that, notwithstanding their evidently shallow-water origin, there is hardly an exposure which does not exhibit one or more beds of pure limestone. This association of littoral beds with limestone is well seen on the cart road to the north of Kálsi, where a thick band of limestone is bounded on both sides by coarse-grained quartz grits.

"The Mundális are evidently later than the Deobán, and earlier than the main disturbance of the Himálayan rocks; so much so that in the limestone area of Northern Jaunsár, the small patches that have been left owe their preservation to having been caught up in the folds and faultings of the limestone, and in this way preserved from denudation. They are probably of pre-Tertiary age.

42. "*The Náhan and Báwar series.*—Above the Mundális are two series of rocks, of which, as they occupy totally distinct areas, it is impossible to say which is the older. Of these one is the Náhan, occupying only a very small area in the extreme south of Jaunsár, and the other is the Báwar, occupying a large area in Báwar.

43. "*The glacial epoch.*—This epoch has left its traces in Jaunsár, though no traces of actual glaciers are known east of the Tons. The only deposits that can be referred to this epoch are the high-level gravels to be seen in most of the valleys, but most distinctly in that of the Seli gád, where, as can be seen from the Chakráta and Mussoorie road, they form broad, gently-sloping terraces on the valley sides."

44. *Rock and soil of the Deoban forests.*—In the forests north of Chakráta the chief rock is the Deoban limestone, which forms all the precipices and is often greatly

developed along dhárs and the sides of nalas. In almost every block it is mixed with some shales which are most prominent at the lower elevations where they sometimes predominate, as in the lower parts of the Chátri and Karáli blocks and along the lower course of the Marauwa gád. They are usually soft and crumbling and of a grey or bluish color, but some are hard and often reddish, as in Inári, Missau (compartment 7), in parts of Asmári and Thona, along the Marauwa gád and in other places.

In compartment 5, Hajáwa, there is a bed of considerable thickness of blue and purple shales, the lower strata of which are slaty, and the bed during the rains is covered with a yellowish-white efflorescence of alum salts.

Overlying the limestone along many broad flat-topped dhárs with gentle slopes, on rounded peaks or caught up in the folds of the limestone, are beds of clay-slates, soft and usually of a yellowish but sometimes of a bluish color, which belong to the Mundáli series. Such beds are to be found near Bojia láni and in numerous other places in the Bodiár block, on the flat ground near Moila temple, and along the upper part of the Gazat-ki-dhár in the same block, in parts of the Missau block, along the Missau road, on Kopti tiba, Odna tiba, and other adjacent peaks, along the Bari dhár, in many places along the Gobras-ki-dhár in Darna, near Seli láni, in places in compartments 4 and 5, Matkángra, at Snow View, along the top of Duráni dhár, near the Ekra and Tipra tibas and in some other places. The shales are ferruginous in places, as near Kanjátra láni, in the lower parts of Duráni 1, in Hajáwa 2, near Ekra tiba, where there are large holes from which ore used to be excavated, and in places in the Pandáwa block.

There are outcrops of quartzites in a few places as in the Inári block along the main ridge, along the Mashak gád, along the Kashmoi gád in Duráni, where hard, crystalline, bluish quartz-like rocks are exposed, in Legúna along the Daura gád, and also cropping out on some dhárs and in the lower parts of Karáli. White quartzose rocks are also very abundant in the Siári block, along the Bherimara dhár and some of its off-shoots, and in the lower parts of Gutugád and Bhujkoti.

In compartment 3, Chátri, there are huge blocks of trap, and outcrops of it are to be seen on the Tons road between Deoban and Pandáwa.

Galena is found at Konain in nodules between beds of limestone, but it is very local in its distribution.

The subsoil is usually a free and sandy clay sometimes loamy and frequently stony. It is often extremely shallow or altogether absent on precipitous ground or on sharp-edged rugged dhárs ; it is also very shallow on some poorly-stocked spurs, but on many dhárs it is fairly deep and sometimes crops out to the surface ; it is also usually deep in ravines, on most flat-topped spurs, on rounded peaks, and on almost all gentle slopes, being in some places over three feet deep. In many localities, however, the subsoil is a rather stiffish clay, such, for example, as the yellow clay which covers large areas in Bodiár and which is much developed in the low-lying portions and on gentle slopes along nalas, as also near the Moila temple. Rather stiff clay is found in the open blanks in Missau, Marauwa 1 and 2, and in parts of Thona, where bands of it occasionally crop out to the surface, in Kanjátra, on the peaks along the main ridge and along the dhárs and in open grassy blanks in compartments 1 and 7, Jádi, and on peaks in Mohna and generally on slopes to the north of the Rangar khad, in Durani 6, over a great portion of the Ekra, Kalered and Hajáwa blocks, in the eastern part of Pandáwa 3, along the Tika dhár in Konain and in parts of Karámba.

The top-soil, where it exists, is mostly loam usually free, dark and fairly deep (from one and a half to two feet) under well-stocked more or less northerly slopes, and along deep moist ravines, *e. g.*, parts of Bodiár, Missau, Thona, Jádi, Darna, Mohna,

Hajáwa, Pandáwa, Legúna, Konain, Gutugád, Bhujkoti, Karámba and in many other places, as well as occasionally on some southerly slopes at high altitudes, as in the stocked portion of Kutniár. Generally, however, it is poor and very shallow or often altogether absent at the warmer aspects, along many dhárs, in open grassy blanks, and on most of the precipitous ground. There is scarcely any loam in the chír forests.

Except along some of the nalas and on some damp northerly slopes, humus is usually absent from the areas open to fires, as, for instance, in the Marauwa, Ekra, Kulered, Amlokri and Dáuda blocks, and in the portions stocked with chír in the Chátri and Karáli blocks. This is also the case on many exposed slopes, as at more or less southerly aspects in Thona, Matkángra, Durání and Legúna, or at best there is only a very thin layer as on similar slopes in Konain.

On well-stocked northerly slopes protected from fire and under most of the karshu forest there is often, on the contrary, a deep, rich layer of humus as in Kutniár, Mohna, Hajáwa, Duliánn, Pandáwa, Konain, Siári, Gutugád, Bhujkoti, Karámba and some other blocks, but on others there is only a slight quantity, *e. g.*, in Moila, Asmári, Darna, and Karáli. In Bodiár the soil is frequently covered with a layer of half decomposed needles from three to six inches deep, very inimical to natural production, and this is also the case in some other localities, as, for instance, on northerly and north-westerly slopes in Asmári and in parts of Konain.

45. *Rock and soil in the Cantonment and detached oak forests.*—Here the principal rocks are shales, slates and quartzites and occasionally outcrops of hard metamorphic rock, belonging to the Chakráta series and in Bándla and Kurwa, partly also to the Mandális.

All these small oak forests are situated close to bands of the Chakráta limestone from which lime is prepared at Kurwa by the Military Works Department.

The soil is generally a free, sandy loam mixed with large pieces of the underlying rocks. It is shallow on ridges but deep in ravines, and in many open places and dhárs it is clayey. There is a small quantity of humus in nalas and in the well-stocked parts.

46. *Rock and soil in the Kálsi forest.*—At Kálsi there is a small development of the Náhan beds, this being the only locality in which they are found in Jaunsár. Above them there are some hard shales, quartzite grits and metamorphic rocks belonging to the Mundáli series, whilst on the chaor at the foot of the Pánjgáon block and on the flat ground at the junction of the Jamna and Tons there are some recent river deposits.

The Náhan beds consist mainly of a soft, coarse, micaceous sandstone, forming the Haripúr ridge and the slopes on either side of it, as also the detached hillock on the opposite side of the Amláwa. It is occasionally covered by beds of brown or red marl which disintegrates into small pieces on exposure to the atmosphere. Detached angular pieces of the sandstone are strewn all over the ground and near the Tons it becomes more compact, forming a valuable quarry from which ornamental stones are extracted, chiefly by the Military Works for use at Chakráta.

In one or two places along the Amláwa and in compartments 10 and 11 of Haripur there are a few beds of a bluish, crystalline limestone belonging to the Mundális. The recent deposits consist of thick beds of boulders and sand mixed with silt.

The soil is a dry, loose, sandy loam, mixed with fragments of rock, shallow on the hillsides, especially along the ridges, but deep on the level ground. Bands of clay crop out here and there along the Haripur ridge and also on the flat ground near the Tons.

CHAPTER IV.

The Stock.

47. *Plants.*—A list of the more important forest plants in the range (excluding Kálsi) with their Jaunsári names, furnished by Forest Ranger Keshavanand, is given in Appendix R. For a more complete list reference should be made to the list of the plants of Garhwál, Jaunsár-Báwar, and Dehra Dún, by King, published in the North-Western Provinces Gazetteer.

48. *The stock map.*—In Appendices B. and C. will be found detailed descriptions of the blocks and compartments, and a stock map has been prepared with the help of the enumeration survey by Forest Ranger Keshavanand, who also described the compartments. This map does not, of course, show every small change, but it represents fairly well the composition of the stock in each compartment. For the upper forests deodár, kail, chír, firs, oaks, kukát, cypress and ayár and buráns are shown by washes of different colors, and where any of the kinds mentioned, although not predominant, yet constitute at least one-tenth of the total number of trees, their presence is indicated by lines of the proper color. Thus a forest of deodár mixed with kail and oak is shown by a green wash representing deodár, the predominating species, and by blue and burnt sienna lines across it to show that it is mixed with kail and oak.

Bare, precipitous, unproductive ground which is not considered suitable for sowing or planting purposes has been shown by a wash of Indian ink, and other blank areas which can be converted into forest have been left uncolored. Where such blank areas contain scattered trees or are being covered with reproduction, this is shown by large dots for the mature trees and small ones for the young plants, and plantations are similarly represented, but are surrounded by a boundary line.

In the Kálsi forest sál, kukát, bákli, gosám and haldu are shown separately, and the dots over the wash indicate the occurrence of large trees of the three latter species where they constitute less than one-tenth of the whole stock.

In Appendix D. the number of acres of each type of forest in each compartment is given, buráns and kukát not being mentioned, unless they predominate. It may be thus summarized for the whole range :—

Types of forest, &c.	Acres.
Deodár	232
Deodár and kail	201
Deodár, kail and other species	995
Deodár, other conifers and oaks	726
Kail	6
Kail, deodár and other species	172
Kail, oaks and firs	322
Firs	799
Firs and deodár	1,595
Firs, deodár, kail and other species	176
Firs, pines and oaks	1,811
Oaks	3,203
Oaks and deodár	124
Oaks, deodár, kail and other species	481
Oaks and conifers other than deodár	1,684
Chír and oaks	212
Cypress	102
Buráns and oaks	309
Kukát	74
Total area stocked with forest	13,074
Plantations	678
Blanks filling up with natural reproduction	1,319
Blanks suitable for planting	3,529
Unproductive ground	3,100
Chaks of cultivation	545
Total for forests other than Kálsi	22,245

Types of forests, &c.	Acres.
Kálsi forest (part described).	
Sál with some bákli and gosám	246
Kukát	68
Kukát with some bákli and gosám	430
Kukat with some bakli, gosám and haldu	766
Kukat with only a few scattered haldu or gosám	232
Area stocked with forest	1,742
Blanks fit for planting	15
Unproductive ground	140
Chaks	18
Total for Kalsi forest (part described)	1,915

Taking cypress as 1 for the upper forests and jáman as 1 for the Kálsi forest, the following figures show the relative numerical abundance of the different species :—

Upper forests	Rai	42	
	Deodár	37	
	Morinda	26	
	Kukát	24	mostly of smal. dimensions.
	Karshu	23	
	Moru	21	
	Bán	21	
	Buráns and ayár	17	
	Kail	15	
	Chír	1	
	Cypress	1	
Kálsi forest	Kukát	70	
	Sál	38	
	Bákli	12	
	Haldu	5	
	Gosám	4	
	Sándan	3	
	Sain	3	
	Khair	1	
	Jaman	1	

It will be observed that the principal types of forests are those of deodár, kail, firs, oaks and miscellaneous species, *viz*, chír, cypress, ayár, buráns and kukát in the upper hills, and totally distinct type of sál and kukát forest at Kálsi. These types will now be discussed separately.

(1)—Deodar.

49 Deodár is found in numerous places between 6,000 and 9,000 feet, but its distribution in this zone is very irregular. The three blocks of 1st class forest, *viz.*, Bodiár, Kanásar and Konain, are essentially deodár ones, as are also about half of the Missau block, the upper and eastern portion of the Karáli block, nearly half of the stocked area in Rikta, and small portions of the Chátri, Kopti, Maraawa, Durúni, Legúna, Siári, and Gutugád blocks. It also frequently forms more than one-tenth of the stock in the kail, fir and oak forests, both over parts of the above-mentioned blocks and also in parts of Moila, Asmári, Kunjátra, Bajamára, and Bhujkoti, and is the only valuable part of the stock in the Karámba and Panikanál blocks. Omitting these two last, for which no stock map has been prepared, the area of deodár-producing forest is estimated as follows :—

	Acres.
Deodár	232
Deodár and kail	201
Deodár, kail and other species	995
Deodár firs and oaks	726
Total area over which deodár predominates	2,154

	Acres.
Kail, deodár and other species	172
Fir and deodár	1,595
Fir, deodár, kail and other species	176
Oak and deodár	124
Oak, deodár, kail and other species	481
Total area in which deodár, though not predominant, forms at least one-tenth of the stock	2,548
Blanks filling up with deodár reproduction or suitable for planting deodár... ...	3,505
Total deodár-producing area ...	8,207

It will be observed that pure deodár forests cover very small areas, chiefly on steep rocky ground at southerly or south-westerly aspects, as in Duráni and parts of the Konain block where the stock is of inferior quality, and it is in such localities that the species reaches its highest limit.

There are three important deodár centres, *viz.*, Lokandi, Konain and Karámba, and these are kept apart in the following summary of the results of the enumeration survey:—

Name of block.	Area capable of producing deodár.	Area at present containing deodár.	V. class, 3"—6".	IV. class, 6"—12".	III. class, 12"—18".		II. class, 18"—24".		I. class, over 24".			Number of trees per acre in stocked area.	
									Green.		Dry.		
					Sound.	Unsound.	Sound.	Unsound.	Good for timber (estimated).	Branchy, badly-grown trees.	Erect.	Fallen.	I. class.	All classes.
	Acres.	Acres.												
Inári	100	...	552	420	86	6	17	11	...	31	...	...	...	...
Hodiar	1,338	976	46,333	30,747	6,308	84	2,537	73	110	2,388	36	8	4·6	91
Kanisar ...	173	171	14,178	5,831	1,303	15	504	11	50	753	17	2	4·7	133
Mseau	1,200	1,032	31,189	16,846	6,825	111	4,223	104	540	5,423	28	4	5·8	63
Moila	500	185	8,118	4,221	1,392	65	531	45	25	474	39	17	2·7	81
Chátri	100	86	7,538	4,037	971	5	432	6	80	958	...	7	1·2	163
Asmari	200	181	4,453	3,536	1,030	32	638	20	40	440	1	...	1·5	56
Kopti	350	303	6,951	3,533	934	15	433	20	55	572	11	1	1·9	88
Marauws, 1 and 2 ...	202	181	8,598	1,961	588	11	174	12	20	242	5	5	1·4	64
Lokandi Centre ...	4,223	3,147	127,910	71,141	19,497	344	9,549	302	920	11,281	187	44	44	76
Konain ...	507	443	22,558	9,400	2,544	47	1,664	42	200	2,590	25	6	6·1	88
Panikandi ...	670	350	7,000	3,502	1,389	91	921	80	212	1,308	48	145	4·5	42
Bajamara, Legúna, Karali, Siári, Gutugad, and Bhujkoti,	2,007	1,072	60,001	20,540	6,602	398	5,215	389	950	7,042	346	207	4·8	61
Konain Centre ...	3,244	2,465	89,559	33,442	10,535	476	7,800	511	1,362	11,000	419	418	5·0	63
Karámba ...	1,500	1,300	21,423	10,046	2,128	32	1,815	48	1,570	3,544	16	7	4·3	34
Rikta	350	155	4,807	1,996	633	7	367	19	30	626	3	3	4·2	55
Karámba Centre ...	1,850	1,355	26,290	12,042	2,761	39	2,182	67	1,600	4,170	19	10	4·3	36
Scattered areas ...	1,060	793	14,893	7,507	2,883	121	1,459	116	100	1,650	38	14	2·2	36
Grand Total ...	10,877	7,760	258,652	124,132	35,676	980	20,990	1,056	3,082	28,101	613	486	4·1	61

It will be seen that the number of good timber trees at present available is very small compared to the total number of trees over six feet in girth. This is doubtless due to the continuous felling of the finest trees and to the forests having been exposed to fir and grazing in the past. Around many of these branchy trees there is a fine

crop of young deodár, and it is of sylvicultural importance to remove the old ones as soon as possible.

The number of the younger classes is very satisfactory and with continued protection a large number of good well-grown timber trees with long clean boles will be produced eventually.

(2)—Kail.

50. Kail is chiefly found to the north of the high ridge between the Jumna and Tons and its great western spur. To the south of this line there are just a few scattered and usually rather unhealthy trees in the northern part of Mohna and in open places in Karámba and Rikta.

The kail-producing area is estimated as follows :—

	Acres.
Kail	6
Kail, deodár and other species	172
Kail, oaks and firs	322
Area over which kail predominates ...	500
Deodár and kail	201
Deodár, kail and other species	995
Fir, deodár, kail and other species	176
Fir, kail and oaks	1,811
Oak, deodár, kail and other species	481
Oak and kail	413
Area over which kail, though not predominant, forms at least one-tenth of the stock ...	4,077
Blanks filling up with kail reproduction	876
Blanks suitable for sowing or planting kail	1,572
Total kail-producing area ...	7,025

Thus kail actually predominates only over very small areas which are situated invariably on northerly or north-westerly slopes just below the deodár forests in the Moila, Missau, Marauwa, Kanjátra, Durani, Bajamára, Legúna, and Konain blocks. Kail mostly lies between 5,500 and 8,000 feet, and it is very frequently associated with deodár, to which it is a valuable companion in its youth, although, on account of its rapid growth cleanings amongst young growth, of the two species must be repeatedly made to assist the more slow-growing but more valuable kind. This pine is found over about half the deodár area of the range, but there are very few in the Bodiár, Rikta, and Karámba blocks.

The results of the enumeration survey are :—

Name of block.	Area capable of producing kail.	Area at present containing kail.	V. class, 3"—6".	IV. class, 6"—12".	III. class, 12"—18".		II. class, 18"—24".		I. class, over 24".				Total number of all classes.	Number of trees per acre in stocked area.
									Green.		*Dry.*			
					Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.		
	Acres	Acres.												
Moila	454	443	10,238	5,167	2,631	86	711	70	380	87	63	24	19,370	44
Missau .	1,090	1,018	12,012	5,646	2,603	93	1,022	152	1,878	329	89	9	24,895	24
Marauwa	415	248	5,824	883	550	15	224	12	326	63	16	10	7,397	29
Kanjátra ...	375	346	11,518	1,606	340	25	214	17	154	20	4	4	13,894	40
Durani ..	540	378	8,583	965	550	20	235	21	196	55	14	9	10,615	28
Bajamára ..	127	100	5,067	1,153	176	22	98	22	188	30	8	..	6,706	67
Legúna	457	218	7,619	1,803	470	45	216	46	296	30	14	7	10,516	50
Karali ...	337	253	7,302	2,651	735	52	430	52	658	82	59	7	11,962	47
Konain ..	324	260	8,491	3,041	611	24	373	32	433	63	16	1	13,071	50
Other blocks,	2,900	2,194	36,005	9,503	2,426	98	919	72	727	153	44	16	50,503	21
Total ...	7,025	5,158	112,755	32,418	11,152	480	5,032	406	5,186	912	277	87	168,429	31

The 1st-class trees are usually inferior in quality, as they grew so much in the open under the old *régime* of forest fires; but the very large number of saplings is most satisfactory, and these forests are rapidly recovering from the effects of past ill-treatment, as is well shown in paragraph 65, which treats of reproduction.

(3)—The Fire.

51. Rai and morinda predominate over large areas between 7,500 and 10,000 feet, chiefly at more or less northerly aspects, and, broadly speaking, the fir belt lies between the zones in which deodár and karshu respectively predominate. Thus firs prevail over large portions of the Moila, Asmári, Kopti, Thona, Kanjátra, Jádi, Mohna, Durúni, Bajamára, Legúna, Siári, Gutugál, Bhujkoti, Karámba, Pandáwa, Duliána and Hajáwa blocks, besides over smaller areas in Bodiár and Rikta. Morinda is often the most numerous in the upper, rai in the lower portions, the latter extending down in decreasing numbers through the deodár to the higher portions of the kail and bán forests. The area occupied by the firs is estimated as follows:—

	Acres.
Fir	799
Fir and deodár	1,595
Fir, deodar, kail and other species	176
Fir, pines and oaks	1,811
Area over which firs predominate	4,381
Deodar, fir and oak	726
Kail, fir and oak	322
Oak and fir	1,120
Area in which fir, though not predominant, forms at least one-tenth of the stock,	2,168
Blanks filling up with fir reproduction	50
Blanks suitable for sowing or planting firs	875
Total fir-producing area ...	7,474

The enumeration survey give the following results :—

Name of block.	Area capable of producing firs.	Area actually containing fir.	V. class, 3"—6".	IV. class, 6"—12".	III. class, 12"—18".		II. class, 18"—24".		I. class, over 24".				Total number of trees of all classes.	Number of fir trees (rai and morinda) per acre of stock.
									Green.		*Dry.*			
					Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.		
	Acres.	Acres.			RAI.									
Bodiár ...	558	558	22,003	11,164	3,017	157	3,251	178	3,943	348	67	17	45,045	83
Kannasr ...	...	...	688	311	116	9	82	8	59	43	3	...	1,319	...
Kopti, compartments 1 and 2.	160	155	5,480	2,507	1,120	119	1,096	126	2,045	332	43	20	12,888	88
				5,294	2,529	110	1,781	161	2,785	441	18	9	20,973	83
Thona	400	340	7,845											
Kanjatra	360	310	7,089	5,969	4,784	362	3,292	303	2,201	706	53	6	25,425	124
Hajawa, compartments 3 and 4.	440	374	8,904	3,854	2,334	311	1,946	259	2,318	544	40	21	20,531	112
Konain	128	128	4,052	2,026	705	37	376	33	723	166	12	4	8,133	81
Bajamara, compartments 1 and 3	200	240	8,945	5,380	1,338	180	727	137	722	304	21	9	17,703	159
Jadi 0	58	57	505	313	135	8	74	2	20	1	4	...	1,057	31
Mohna	549	395	8,470	3,852	1,946	98	1,261	90	985	210	17	3	16,950	90
Matkangra	...		103	110	33	1	15	4	3	2	...	...	271	...
Closed areas ...	2,913	2,557	74,693	40,780	18,957	1,387	13,901	1,310	15,803	3,157	278	89	1,70,855	100
Hajawa 6	157	120	1,324	677	368	18	104	15	60	18	1	...	2,785	55
Ditto 7	144	80	3,212	2,108	806	116	568	81	632	217	41	5	7,786	313
Missau ...	760	760	18,510	8,023	3,475	121	2,430	209	2,754	567	62	6	31,150	41
Other open forests ...	3,500	3,076	115,506	66,866	32,372	2,411	18,299	2,287	21,150	4,821	1,648	795	266,215	141
Total open areas ...	4,561	4,042	133,612	77,873	37,021	2,666	21,401	2,586	24,596	5,623	1,752	806	307,936	127
Grand Total ...	7,474	6,599	208,305	118,653	55,978	4,053	35,302	3,896	40,399	8,780	2,030	895	478,291	117

Name of block.	Area capable of producing firs.	Area actually containing firs.	V. class, 3"—6".	IV. class, 6"—12".	III. class, 12"—18".		II. class, 18"—24".		I. class, over 24".				Total number of trees of all classes.	Number of fir trees (rai and morinda) per acre of stock.
									Green.		Dry			
					Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.		
	Acres.	Acres.			MORINDA									
Bodiár	...	...	734	517	134	7	87	6	59	11	3	...	1,558	...
Kopti 1 and 2 ...	...	...	85	255	214	2	98	13	84	24	1	...	776	...
Thona	...	...	3,152	2,418	1,113	22	333	30	175	48	1	1	7,302	...
Kanjátra . .	...	...	7,962	2,701	1,435	103	608	77	176	102	3	3	13,165	...
Hajáwa 1 and 4 ...	...	...	10,735	5,225	2,650	227	1,322	178	675	214	9	9	21,244	...
Kunain . .	...	...	1,529	532	126	4	29	11	52	17	...	..	2,300	...
Bajamára 1 and 3 ...	...	...	10,838	6,825	1,844	92	540	76	210	90	9	1	20,531	..
Jádi 9 . .	...	...	255	205	140	1	14	1	2	.	1	...	709	...
Mohna	...	...	11,939	4,287	1,265	40	527	44	302	42	2	...	18,448	...
Closed areas ...	...	...	47,229	23,055	8,921	498	3,559	445	1,735	548	29	14	80,033	.
Hajáwa 6	...	...	1,945	1,432	372	10	64	9	41	19	1	...	3,893	...
Ditto 7	...	..	11,870	4,990	1,033	173	446	121	184	162	10	4	19,593	. .
Missau	..	...	744	436	158	6	82	14	89	34	1	...	1,564	.
Other open forests ...	...	...	103,073	40,802	17,673	599	5,836	615	3,305	986	424	123	182,448	...
Open areas ...	.	...	117,632	56,720	19,836	788	6,428	759	3,619	1,168	436	127	207,498	...
GRAND TOTAL ...	...	. .	164,861	79,775	28,757	1,286	9,987	1,204	5,354	1,701	465	141	293,531	...

Speaking of the two firs, Sir D. Brandis in his Preliminary Working Plan says :—

" (1) *The Himálayan Spruce, Rai* (*Abies Smithiana*).—The hanging cones ripen and the seed falls in October or November. It is believed that in the Deoban forests a full crop of seed generally occurs once in three or four years. Seedlings of the Himálayan spruce spring up readily and grow up vigorously in open pla es without shelter, provided that they are not too dry. Young plants up to 6 feet high are often found under the shade of large trees, but they do not generally look vigorous, and make no progress until sufficient light is given. On the other hand, where sheep and goats allow it to come up, young growth of all ages is found on the edge of the forests and on perfectly bare slopes. Under these circumstances, it will be necessary in forests mainly consisting of spruce to give much light when cuttings are made, with the view of ensuring the natural reproduction of this tree. This remark mainly relates to slopes with a more or less northerly aspect, at the mean elevation of the Thona and Kanjátra blocks. It is not impossible that in other forests on different rock, at a lower elevation and in a different climate, this tree may require a different treatment.

" Young spruce is readily eaten by sheep and goats, and in many places we found this to be the cause of the stunted appearance of the young trees. Old stems, like those of the European spruce, are, under certain circumstances not yet explained, subject to dry rot in the centre. It is probable that plantations of this tree will succeed easily, and that it can with advantage be employed to stock open grassy slopes particularly with a northerly aspect.

" (2) *The Himálayan Silver Fir, Morinda* (*Abies Pindrow*).—The erect cones break to pieces, and scales and seeds fall in October or the beginning of November. Like the European silver fir, young trees of the morinda require shelter and live for a long time under deep shade, maintaining a bright green color and a healthy appearance, but making little progress until light is given overhead, when they produce vigorous terminal shoots. Wherever natural reproduction on a regular system is attempted in these forests, success will probably be certain in the case of the

silver fir, and on that account morinda trees likely to shed seed should be spared in all cuttings as much as possible. Old stems are generally sound, and there is no ground to anticipate that the wood will be less acceptable as fuel than that of the spruce."

(4)—The Oaks.

52. Four species of oak occur: karshu, moru, bán and inai, of which the first three only are important, and they occupy two very marked zones: (*a*) the karshu forests, which occur above the fir zone in a narrow strip along the main ridge and its large westerly spur, extending for a considerable distance down the slopes at easterly and more or less southerly aspects, as in the higher parts of the Kutniár, Jádi, Mohna, Hajáwa and Pandáwa blocks, whilst smaller areas are also met with in compartment 1, Karámba, and on southerly slopes for a short distance below Kopti tiba in the Kopti block; (*b*) the lower oak forests, consisting almost solely of bán mixed abundantly with ayár and buráns, which often predominate numerically and which occur in the Cantonment forests and in the outlying oak forests, as well as in the lowest part of Missau and between the chír and deodár zones in Chátri mixed with chír, whilst there is a mixed oak forest of bán and moru over nearly all the stocked areas in Inári, Dárna, Matkángra, Ekra, Kulered, Amlokri and Dándá, as well as in the lowest parts of Moila, Thona, Maranwa, Jádi, Mohna, Duráni, Legána, Karóli, Siári, Gutugád, Rikta, Pandáwa, Duliana, and Hajáwa. At the lowest elevations bán is almost the sole oak, moru mixing in higher up and being common along gáds, but nowhere forming large masses of forest.

There are very few inai, and these are found mainly along nálas at the lowest elevations, as, for example, in Bándla and Amlokri.

Roughly speaking, the oaks may be said to occur in this range between the following limits :—

Inai	...	...	...	...	...	Below	5,500	feet.
Bán	...	...	...	...	...	5,000 to	8,000	„
Moru	...	...	...	...	...	7,000 „	8,500	„
Karshu	...	...	...	...	...	8,500 „	10,000	„

The area occupied by them is estimated as under :—

							Acres.
Oak	...	...	...	...	...	...	3,203
Oak and deodár	...	...	...	...	...	...	124
Oak, deodár, kail and other species	...	...	...	...	...	...	481
Oak and conifers other than deodár	...	...	...	...	...	...	1,534
Area over which oaks predominate						...	5,342
Deodár, kail and oak	...	...	...	...	...	...	341
Deodár, other conifers and oak	..	...	...	...	...	...	726
Kail, deodár and oak	...	...	...	...	...	...	164
Kail and oak (with or without firs)	...	...	...	...	...	...	322
Fir, deodar, kail and oak		...	...	...	...	...	107
Fir, pines and oak	...	...	...	...	...	...	1,811
Chír and oak	...	...	...	...	...	...	212
Burans and oak	...	...	...	...	...	...	309
Area in which oak, though not predominant, forms at least one-tenth of the stock						...	3,992
Blanks filling up with oak reproduction			...	...	...	...	135
Blanks suitable for sowing or planting oaks				...	...	...	1,700
Total oak-producing area						...	11,169

Of this area the outlying oak forests below Chakráta occupy 616 acres, whilst karshu predominates over 1,026 acres in the highest parts.

The enumeration survey gives the following figures :—

Name of block.	Area in which the oaks predominate in acres.	V. class, 3"—6".	IV. class, 6"—12".	III. Class, 12"—18".		II. Class, 18"—24".		I. Class, over 24".				Total for all classes.
								Green.		Dry.		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
				KARSHU.								
Kopti 1 and 2 ...	...	1,688	803	293	74	91	37	17	12	...	...	3,105
Thona	18	2,438	1,053	676	162	207	78	127	80	...	...	4,821
Kanjátra	17	1,747	1,571	677	146	294	53	70	32	4	..	4,594
Jadi 9	57	8,708	2,395	1,509	203	410	96	102	33	17	24	13,497
Mohna	187	21,511	8,365	4,622	477	1,846	360	724	277	1	...	38,183
Bajamára 1 and 3 ...	28	4,458	3,154	1,251	351	320	166	65	120	...	...	9,885
Hajáwa 1 to 4 ...	7	975	1,153	453	105	101	36	23	25	1	...	2,872
Karáimba 1 ...	180	7,052	5,849	2,614	476	697	297	305	425	14	11	17,240
Closed forest ...	494	48,577	23,933	12,005	1,994	3,966	1,123	1,433	1,004	37	35	94,107
Hajáwa 6 ...	124	22,227	13,832	3,692	668	596	270	202	181	...	...	41,618
Ditto 7 ...	72	15,136	6,342	2,021	746	472	258	129	261	10	5	25,990
Jádi 6 and 7 ...	47	12,568	3,119	887	202	296	75	59	30	8	7	17,251
Other open forests ...	289	44,941	26,921	7,629	1,695	1,416	602	493	438	08	70	84,203
Open forest ...	532	94,872	50,214	14,829	3,311	2,780	1,205	893	855	86	82	169,127
Grand Total ...	1,026	143,449	74,147	26,924	5,305	6,746	2,328	2,326	1,859	123	117	263,324
				BAN AND MORU.								
				Moru.								
Bodiár	69	2,949	6,942	2,567	824	697	420	269	286	6	...	14,969
Kanásar	...	140	50	4	8	...	3	...	1	...	...	206
Kapti 1 and 2 ...	...	977	852	140	93	38	42	48	67	...	...	2,266
Thona	90	2,129	2,429	791	398	311	270	224	287	3	...	6,842
Kanjátra	28	3,484	3,005	1,348	619	508	469	275	465	3	5	11,171
Matkángra (closed part),	289	3,349	4,589	1,483	348	475	173	309	236	1	...	10,063
Mohna (ditto) ...	53	3,571	4,053	2,172	520	930	388	506	359	...	1	12,500
Bajamára 1 and 3 ...	...	508	620	201	90	58	68	47	112	2	1	1,707
Konain ...	7	1,419	1,073	339	215	128	117	124	161	...	...	3,576
Hajáwa ...	...	2,399	2,334	1,278	410	482	222	421	333	2	4	7,840
Kurwa	98	...	...	...	...	...	...	...	...	...	...	...
Closed forest ...	643	20,985	26,037	10,327	3,525	3,577	2,191	2,223	2,307	17	11	72,100
Open but fire-protected areas.	2,506	38,616	35,980	13,311	4,808	4,506	2,389	4,091	3,572	196	96	107,565
Area open to fires ...	1,167	16,070	22,436	9,081	2,778	3,461	1,550	2,463	1,599	44	12	60,004
Open forests ...	3,673	54,686	58,416	22,992	7,586	7,967	3,939	6,554	5,171	240	108	167,659
Grand Total ...	4,316	75,671	85,353	33,319	11,111	11,544	6,130	8,777	7,478	257	119	239,759
				Bán.								
Bodiár	...	514	1,398	753	64	469	75	502	171	3	4	4,013
Kanasár	...	4,252	1,509	460	94	176	65	186	113	2	2	6,859
Kapti 1 and 2 ...	...	28	26	34	3	10	5	19	9	...	...	134
Thona	...	119	205	185	22	87	17	125	64	1	...	825
Kanjátra	...	167	473	272	77	142	78	110	105	..	...	1,420
Matkangra (closed parts),	..	2,860	3,380	1,429	134	614	89	682	170	2	1	9,361
Mohna (ditto) ...	...	120	275	262	23	125	15	70	16	2	1	918
Bajamára 1 and 3 ...	...	..	..	1	...	...	...	1	...	...	...	2
Konain	..	588	673	239	44	110	40	115	67	...	...	1,876
Hajáwa 1 and 4 ...	...	1	16	2	2	2	3	...	2	...	...	28
Kurwa	...	5,170	5,847	988	50	200	21	55	8	..	...	12,354
Closed forests ...	...	13,825	13,802	4,625	522	1,935	408	1,940	745	10	8	37,820
Open but fire-protected areas.	..	41,037	48,502	19,972	2,918	7,775	1,791	8,079	2,690	130	73	132,076
Areas open to fires ...	...	11,892	23,582	15,632	2,395	6,052	1,733	6,229	2,171	124	45	70,755
Open forests ...	...	52,929	72,084	35,004	5,313	14,727	3,524	14,308	4,870	254	118	203,731
Grand Total ...	...	66,754	85,886	40,229	5,835	16,662	3,932	16,248	5,615	264	126	241,551

Speaking of the karshu forests in 1878, Sir D Brandis said —"The seed ripens early in the rains, but at this elevation (Mohna, 9,000 feet) the karshu does not seed every year There was no seed in 1874, but there was a heavy crop in 1873, and consequently the ground under the trees is now everywhere covered with seedlings of that year, most of which will of course perish unless light is given Nearly every block in the forest is covered with young growth of more advanced age, and it seems probable that karshu forests can readily be reproduced by means of two successive cuttings, provided a good seed year precedes or follows the first cutting The extent of the first cutting must be determined by experience, sufficient light must be given to enable the seedlings to grow up, and sufficient trees must be left for seed and partial shelter As it is desirable for many reasons to encourage the growth of mixed forest, all vigorous coniferous trees scattered in karshu forests should be spared at the time of the first cutting"

The number of unsound oak is very large, especially in the case of moru, where nearly half of the 1st class, one third of the 2nd class and one-fourth of the 3rd class trees come under this category.

(5)—Miscellaneous Species

53. (a) *Chir.*—The only chir forests are those at Chátri and Karáli with a small patch at the bottom of the Raura block, and the area is not large, viz —

	Chatri	*Karáli*	*Raura*	*Total*
Chir and oak	109	88	15	212
Oak and chir	129	26	..	155
Total .	238	114	15	367

Raura has been successfully fire protected since 1872, but the other two blocks have hitherto been burnt annually The protection of Chatri was found difficult owing to the fact that it surrounded the large village of Koti. In order to relieve this village from the pressure of forest conservancy it has been determined to abandon 730 acres of Government forest, mostly chir interspersed with numerous cultivated patches, and to fire protect the remainder of the block, 586 acres, including the chir area shown above.

The number of chir is as follows, although, owing to a revision of boundaries after the enumeration was made, the figures are not quite correct The number in other blocks includes trees scattered in forests of other species, as well as in the 23 acres given as the chir-producing area, and therefore the number of trees per acre cannot be calculated —

Name of block	Chir producing area in acres	V class 3"—6"	IV class, 6"—12"	III Class, 12—18		II Class, 18—24		I Class, over 24				Total number of all classes	Number of trees per acre of stock
								Green		Dry			
				Sound	Unsound	Sound	Unsound	Sound	Unsound	Erect.	Fallen		
Chátri .	238	1,180	1 891	1 684	15	1 248	14	1,390		7		7 429	31
Karah	114	293	951	943	4	718	3	591	2	2	2	3 509	31
Raura (closed to fire),	15	428	125	47		61	1	4				686	44
Other blocks	23	369	563	640	15	407	12	626	42	7	1	2 682	..
Total	390	2,270	3,530	3 314	34	2 434	20	2,611	44	16	3	14,286	

Attention is drawn to the favorable condition of the small chir area in Raura in paragraph 65 on reproduction

54. (*b*) *Cypress.*—This species occupies small areas of very rocky and precipitous ground in higher parts of the Moila and Missau blocks, *viz.* :—

	Acres.
Moila	... 91
Missau	... 11
Total	... 102

There are also a fair number of cypress on rocky ground in Inári and Bodiar, and a few solitary trees here and there in Kopti, Marauwa, Jádi, Matkángra, Mohna and Durám, but in all there are only a little over 10,000 trees of all classes, as the accompanying statement shows :—

Name of block	V class, 3"—6".	IV class, 6"—12".	III class, 12"—18"		II class, 18"—24"		I class, over 24".				Total number of all classes
							Green		Dry		
			Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect	Fallen.	
Moila .	2,646	2,198	1,419	198	516	154	462	112	54	87	7,846
Missau ...	963	957	407	15	282	45	315	35	7	3	3,089
Other blocks ...	225	261	60		20	3	6	1			576
Total ...	3,834	3,416	1,946	213	818	202	783	148	61	90	11,511

55. (*c*) *Kukát.*—Except where it fringes nalas, kukat only predominates over 23 acres in Mohna 12 and over 51 acres in Dárna, occurring in the latter block broad strips along the nalas. Elsewhere it is generally found mixed in different proportions with the rest of the stock, but is usually most numerous in nalas and in other moist localities. In the lower forests it often forms at least one-tenth of the stock numerically, but as it consists chiefly of the two lowest classes, and as most of the species never reach to large dimensions, it is not of great importance as a fuel producer.

In the lower oak forests the principal kukát are willows, *Cornus capitata* and Macrophylla, wild pear, holly, poplar, *Euonymus*, *Melionma*, and laurels. In shady ravines in the Jádi block there is rather a large tree called by the "Jaunsárs" ratenda (*Daphniphyllum himálayense*). In Karali in the oak forest there are some hill tún and *Pterasma quassioides*. A few hornbeam, alder and elm occur here and there, and in the Dánda block both *Carpinus viminea* and *fagínea* are found.

In the fir and karshu forests we find a few yew in dense forests; and chiefly along nalas, but also not unfrequently scattered over the higher slopes, horse-chestnut, hazel, maples, willows, bird-cherry, kat-bhoj, with some *Pyrus Aria* in the upper parts of Gutugál and Bhujkoti. Forest Ranger Keshavanand also discovered one or two Betula bhojpattra in the highest portions of Bhujkoti and of Bajamára I, the only known instance of this species occurring in Jaunsár.

The following table shows the number of kukat in the upper forests :—

Kind of forest	V class, 3"—6"	IV. class, 6"—12"	III class, 12"—18"		II class, 18"—24'.		I class, over 24"				Total of all classes.
							Green		Dry		
			Sound	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect	Fallen.	
Closed to grazing and fires	30,538	15,609	1,072	600	417	197	231	153	4	...	58,427
Closed to fires only	100,772	42,971	7,180	2,047	1,414	662	825	565	140	34	156,610
Open to grazing and fires	31,078	19,053	3,851	979	743	272	385	221	16	4	56,402
Total ...	171,388	77,633	12,503	3,632	2,574	1,131	1,441	939	160	38	271,439

The number of 5th-class trees seems large compared to those of the 1st class, but it must be remembered that various species are included, many of which always by nature remain mere shrubs and consequently only appear in the two smallest classes.

56. (*d*) *Burána and Ayár.*—These two species are usually found associated with bán and often numerically predominate, although from their smaller dimensions they are not so conspicuous as the former. They both yield very inferior fuel, but are useful in open forests, as they are not much eaten by cattle and can thus get up, whilst the young bán is kept down by constant grazing. This fuel will not be taken by the Commissariat, but a small quantity can be sold in the Chakráta bazár.

Buráns and ayár have a decided predominance in Kurwa 2, in about half of Kots, in Kulered 1, Dánda 1, and Gutugád 4.

The figures in the enumeration survey may be summarized thus:—

Kind of forest.	V. class, 3"—6".	IV. class, 6"—12".	III. CLASS, 12"—18".		II. CLASS, 18"—24".		I. CLASS, OVER 24".				Total number of all classes.
							Green.		*Dry.*		
			Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
					Burána.						
Closed to fires and grazing.	8,701	7,081	1,189	328	391	171	162	172	1	...	18,196
Closed to fires only ...	26,277	30,073	5,364	2,076	1,433	1,133	677	920	21	10	67,984
Open to fires ...	18,147	21,101	5,429	1,134	1,136	450	375	212	5	2	47,991
Total ...	53,125	58,255	11,982	3,538	2,960	1,754	1,214	1,304	27	12	1,34,171
					Ayár.						
Closed to fires and grazing	5,119	3,008	405	91	94	36	38	22	...	...	8,813
Closed to fires only ...	14,328	12,958	1,985	410	202	120	65	46	3	...	30,207
Open to fires ...	8,763	8,426	1,630	219	173	60	62	13	...	...	19,346
Total ...	28,210	24,392	4,020	720	559	216	165	81	3	...	58,366

57. (*e*) *Box and Walnut.*—These are the only two other species deserving special notice.

The box is only found in three blocks, *viz.*, Jádi, Dárna and Matkángra, and the finest trees are in Jádi, amongst large, loose, limestone rocks, in warm moist shady ravines. The growth is here comparatively fast for this tree, there being from 20 to 25 rings per inch of radius, and the trees may remain sound up to two and a half or three feet in girth. The wood is somewhat lighter than that of the Persian box. Altogether there are 3,795 saplings and trees, but only 173 over three feet in girth, all the finest trees having been already exported.

The walnut grows in damp khads between 7,000 and 9,000 feet, but there are only 1,500 trees of all classes and scarcely any large trees, those which do exist being for the most part unsound. It is commonest in the eastern half of the range in Bhujkoti 3.

The Kálsi Forest.

58. This forest comprises 4,576 acres at the junction of the Jumna and Tons. It is included between these two rivers, a narrow strip running up the Amláwa almost as far as Saiah. Of this area 2,661 acres, including the Thaina, Amláwa, Moila and Dhaira blocks and over half of the Pánjgáon block, have neither been valued nor described, the Amláwa block being conserved in order to prevent landslips on the Chakráta cart road, whilst the other portions which overhang the Tons and Jumna are in many places rocky and precipitous, landslips being common, and contain for the most part a wretched and sparse kukát forest with a few inferior

bákli, gosám, &c They are also somewhat inaccessible and difficult to work, so had better be kept, at least for the next twenty years, simply to supply the wants of the villagers

The remainder, or 1,915 acres, consisting of the Haripúr (including Khádar) and Barabágh blocks and a portion of the Pánjgaon block, is situated in the immediate vicinity of Kálsi on either bank of the Amláwa and with some slopes draining directly into the Tons. Its configuration is described in paragraph 37, its rock and soil in paragraph 46.

The stock consists over most of the area of bákli, gosám, haldu, sain, sándan and large kukát, such as bahéra, jingan, débri, jáman and kaim, all species being represented by a large number of mature trees, together with a lower stage of scrub growth of inferior kukát, the most common being kúri, karaunda, ber, chila, and mendal Both sides of the Haripúr ridge and its main spur, as well as the central portion of compartment 1, Barabágh, and a few small patches in Pánjgáon, contain a forest of sál saplings and poles mixed in many places with some sain saplings and a few trees of bákli, gosám, débri, jaman, kat-bhilawa, jingan, &c The level ground and gentle slopes of compartments 9 and 10, Haripúr, are stocked with a dense scrub of inferior kukát, overtopped here and there by a few large haldu, pipal, jáman and an occasional mango, the scrub being occasionally interrupted by open blanks. Generally speaking, the forest is fairly dense in the sal areas, along nálas and on the slopes facing the Tons, it is very dense on the chaors and on most of the flat places, whilst it is very open on more or less southerly slopes in Haripúr and over a great part of the Barabágh block, compartment 4 in that block being quite unworkable.

The acreage under different types of forest is given in Appendix D.

The contents of the portions valued are given below. The number of unsound trees is very large, due to many of them being past maturity, to the practice of lopping, to former fires, and also perhaps to the poor character of the soil which renders much of the area unsuitable for high forest. Most of the trees are also crooked and often stunted. In the case of haldu another cause of unsoundness is the practice of not felling trees for timber, but only cutting off the larger branches. The quality of the stock is therefore poor, but there are some very fair young sál, especially in Haripur 14 and Barabágh 1. Amongst climbers *Combretum decandrum* is common along nalas and in the lower portions and does much damage. Maljan and goj also occur in small numbers, and *Pueraria tuberosa* is common in places, especially in the Pánjgáon block, but is not injurious.

Name of species.	IV class, 6"—12"	III CLASS, 12'—18"		II CLASS, 18"—24"		I CLASS, OVER 24'		Total of all classes
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
Sál	45,349	3,362	437	295	170	91	124	49,828
Sain ...	3,421	479	25	78	7	37	17	4,064
Shisham ...	27	20	...	5	2	...	..	54
Khair	989	90	29	8	9	1	1	1 127
Bakli ...	14,941	3,213	426	822	242	251	128	20,023
Haldu ...	4,452	1,080	606	315	586	334	1,324	8 697
Gosam ...	9,568	1,425	607	254	288	115	280	12,537
Jaman	1,220	219	35	43	31	16	19	1,583
Sándan ...	4,117	48	12					4,177
Dhaura	112	16	2	..			...	130
Large kukát .	63,174	5,781	859	747	272	425	327	71,585
Small kukat ...	25,811	383	117	6	3	..		26,320
Total ...	173,181	16,116	3,155	2,572	1,610	1,270	2,220	200,124

The Cantonment Blocks.

59. From the Gazetteer we learn that previous to 1866 the site of the present Cantonments consisted of a range of grass-clad hills with more or less dense oak forests running up on all sides from the valleys below. The ground was used solely for grazing and a few loose sheds here and there the only signs of habitation. The supposed unlimited supply of good water at a high level on the Deoban range of hills marked the place as in every way suitable for a military station, and operations were commenced in 1866, but no troops came until 1869, when some sappers were stationed here and were succeeded by the 55th Regiment. Since this date these forests have become of importance, as oak makes the best fuel and the forests are close at hand, whilst the area of oak forests closed to fires and grazing under the control of the Forest Department is limited compared with the other classes of forest.

The blocks which it is proposed to lease from the Cantonment Committee (*vide* paragraph 161) are stocked with bán oak and anunderstage of buráns and ayár, with some kukát along the nalas, whilst a few pines are beginning to appear since fires have been excluded The stock is nowhere dense, unless where it fringes some of the larger nalas, and it is often excessively open along dhárs and at exposed aspects generally, whilst there are numerous grassy blanks occupying the flanks of dhárs with easterly, south-easterly and southerly aspects, such blanks being either altogether devoid of tree growth or dotted with only a few ban, ayár, and buráns here and there.

In the two blocks Lurli and Sntoli, which have been closed to grazing for the past eight years, reproduction, although somewhat patchy, is very good for all species, and the young plants are doing well, but there are very few established seedlings in the grassy blanks.

In the three blocks open to grazing, which it is proposed to take up, reproduction is also good as far as numbers are concerned, but the young bán are excessively browsed by cattle except on steep places and are in some spots reduced to mere bushes. Ayár and buráns seedlings are very common, but they are scarcely touched by grazing animals, the young leaves of ayár being very poisonous. It is to be feared, in consequence, that, if indiscriminate grazing be allowed, the valuable oak forest will be replaced by the other two species, both of which are of scarcely any value even for fuel.

Below is a summary of the enumeration survey of the five blocks (Lurli, Sootoli, Chilmeri, Patiadhár and Gobráni) made at the beginning of the year :—

Name of species.	IV. class, 6"—12".	III. class, 12"—18".		II. class, 18"—24".		I. class, over 24".			Total of all classes.
						Green.			
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Dry.	
Kail	12	...	...	...	...	...	...	...	12
Chír	7	...	...	...	...	...	...	...	7
Rai	1	...	...	...	...	...	...	...	1
Moru	107	21	34	...	7	...	4	...	173
Bán	16,010	7,219	926	2,713	536	2,753	1,136	8	31,301
Buráns... ...	15,752	4,360	1,704	1,227	991	568	730	3	25,335
Ayar	15,491	3,345	769	564	257	160	92	...	20,678
Kokát	6,256	465	232	70	54	23	21	...	7,121
Total ...	54,536	15,410	3,665	4,574	1,845	3,504	1,983	11	85,228

It will be observed that the number of unsound trees is very large, and this may be attributed to fires and grazing in the past, as also to the fact that many of the 1st-class trees are past their *maturity*.

Influence of altitude.

60. This influence is very marked in the Deobán range, extending as it does from 1,500 feet at Kalsi to 10,075 feet at Karamba tiba. At Kálsi we find the sál and its associates, the highest point to which they extend being in the Burabagh block up to an elevation of about 2,500 feet. On ascending the Chakráta cart road this vegetation soon gives place to a somewhat scrubby growth of *Bo-hmeria*, *bauhinias*, *Woodfordia*, &c. Higher up, between 4,500 and 7,000 feet, there is the zone of bán oak, rhododendron and ayár, between 7,000 and 8,500 feet the moru oak, and from 8,000 feet to the highest point of the range the karshu oak. Amongst the conifers chír is found within forest limits from 5,000 to 6,000 feet, deodar and kail from 6,000 to 8,000 feet, rai and morinda from 8,000 feet and upwards. The kail zone is, however, slightly lower than that of the deodar, the rai than that of the morinda, although for the most part they are found mixed together. The limits here given are frequently exceeded by individual members of the different species, and the influence of altitude is often considerably modified by the aspect, soil, drainage, &c. Thus on the northern slope of a ridge the moru oak may come up to the summit, whereas on the warmer slopes of the same ridge there may be nothing but bán, and this is well seen along the spur on which the Mandáli bungalow is built. Again on the hot dry slopes of the Bodiár forest deodár extends up to 9,000 feet.

The herbaceous vegetation changes with the altitude in an equally marked manner, and in the highest zone nearly all the forms are closely allied to European ones; it is here that primulas, anemones, ranunculi, balsams, &c., abound, together with quantities of maiden-hair and other ferns. A genus not found in Europe, *Strobilanthes*, grows in dense masses under shady forest, and there are two gregarious bamboos, *viz.*, the small ringál (*Arundinaria falcata*) between 5,000 and 7,000 feet, and the large ringál (*Arundinaria spathiflora*) from 7,500 to 10,000 feet.

Influence of aspect and slope.

61. The effect of aspect in these hills is well seen when looking towards Deoban from Chakrata. In front are bare, grassy and rocky slopes, whilst just appearing above the main ridge is a long row of firs, the top of the coniferous forests which clothe the slopes facing north. The forests which do exist on the southerly slopes above Chakráta consist of the two oaks, moru and bán, and their associates, rhododendron ayár, &c., whilst it is only behind the main ridge that we find the firs in abundance.

The greater portion of the extensive grassy blanks found in the range face more or less south, and wherever there are forests facing the south, south-west or south-east, they are usually very open, the chief exception being in the case of the karshu, which forms almost pure and generally dense forests at these aspects in the highest parts, *i.e.*, Kutniár, Hajawa 6 and 8. Otherwise the densest forests are met with at northerly, north-westerly, and north-easterly aspects.

At the same altitude throughout the forests to the north of the main ridge from Durání to Bhujkoti, it is common to find deodar predominating on the more or less southerly slopes, which are invariably steep and rocky or even precipitous, the firs on the more or less northerly ones. Cypress only grows on the most precipitous and rocky places, chiefly in the Moila block, and deodár likes steep gradients, preferring slopes of over 25°, unless there is exceptionally good drainage and the forest is a dry one as in parts of Bodiár.

Influence of locality and soil.

62. The most striking effect of locality is to be seen in the narrow fringe of broad-leaved trees which border the nalas, the slopes on either side being clothed with conifers. The cause of this is doubtless the deeper and better soil near those streams as well as the greater moisture.

The finest karshu forests are situated on the rounded tops of the highest hills, where light is abundant and the soil deep and somewhat clayey. The cypress is supposed to have a preference for a calcareous, the two pines for a siliceous soil, whilst the deodár is indifferent, provided the soil is not too stiff and the drainage good. The oaks and the spruce thrive well, on the contrary, on clayey ground, the soil having to be deep for the former to attain large dimensions. Box is only found in the damp shady valleys between Jádi and Chakráta. The presence or absence of forest also exercises a most marked influence; thus the yew is only to be found under the dense cover of taller trees, morinda does not come up in the open, whereas this is a necessity for young pines.

Quality and size of the trees.

63. Most of the mature deodár are very branchy, knotty and unfit for timber, as they have grown up in open forests exposed to fires and to unrestricted grazing; but the younger classes are more promising and a large number of valuable young trees are growing up for future consumption, especially in those places where the natural seedlings have come up so thickly that they now form dense young pole forests, the poles already having lost a number of their lower branches Thus out of some 40,000 1st-class trees in this range it is estimated that not quite one-tenth are good timber trees. The best trees now available are found in the Karámba, Gutugád and Bhujkoti blocks, having grown up amidst a dense forest of firs, &c.

For similar reasons most of the large kail are not of good quality, but there are a very large number of well-grown firs, especially rai, capable of furnishing excellent karris, planks, &c., and it is regretable that the present demand is limited to the small requirements of Chakráta. The best blocks for good spruce are Karámba, Bhujkoti, Gutugád, Kopti, and Bodiár.

As the oaks are only used for fuel their quality is not of much importance, and the vast majority are crooked and badly grown, whilst nearly half the 1st-class trees and a very large proportion of the 2nd and 3rd class ones are unsound. In the case of very large trees, however, knottiness is a disadvantage, as it prevents them being split easily, and many of them have to be made into charcoal as the easiest means of utilizing them. A great number of oaks have been damaged by lopping. Generally speaking, in the closed forests there is a marked improvement in the quality of the young growth compared with that of the older trees.

Forest Ranger Keshavanand measured the heights of a number of trees of various kinds in different compartments, and his measurements are given in Appendix R. The deodár goes up to 150 feet in height and 15 feet in girth, whilst the two firs attain in places a height of nearly 200 feet and a girth of 15 feet. A rai which the forest students measured in Kopti was found to be 170 feet high and 14 feet in girth, and it was estimated that it contained 1,500 stacked cubic feet of wood. In Inári a moru was measured 142 feet high and 12 8 feet in girth, whilst a bán in the same block was found to be 113 feet high and 16 feet girth; but these two oaks usually run to from 50 to 90 feet high, with a girth of 6 to 9 feet. In the forests below Chakráta, however, the ban seldom exceeds 30 feet in height and 4 5 feet in girth. The karshu is, as a rule, a smaller tree, the biggest measured being two trees in Leguna, one 91 feet high and 10 1 feet in girth, the second 71 feet in height and 11·6 feet in girth, but the usual size of mature trees is from 50 to 80 feet high and 5 to 7 feet round.

Burán sometimes acquires a large girth, but seldom grows more than 35 feet in height. One tree in Dárna had a girth of 9 feet and a height of 49 feet.

Density of the Stock.

64. The present composition of the forests is well shown in the following table, omitting Panikanál Kuramba and part of Kálsi, for which no stock map has been prepared :—

Acres.

Stocked with forest.	Plantations.	Blanks being covered with natural reproduction.	Blanks suitable for planting.	Unproductive blanks.	Chaks of cultivation.	Total.
14,816	078	1,319	3,544	3,669	563	24,580

Thus when the forests were taken up by the Forest Department nearly a fourth part of the ground perfectly suitable to good forest growth consisted of grassy blanks, one-third of which has been already covered with seedlings natural or artificial.

The average density of the stocked portion, as far as trees three inches in diameter and upwards are concerned, is given in the following table, where the figures are somewhat too high, as scattered trees growing in grassy blanks could not be separated from the rest :—

Average number per acre.

Diameter classes.	Deodár.	Kail.	Rai.	Morinda.	Karshu.	Mora.	Bán.	Burúns and ayár.	Kukát.	Chír, learí, ;;as; walnut, and box.	Total.
I. ...	2	1	4	...	...	1	2	...	...	...	10
II. ...	1	...	3	1	1	1	2	...	...	...	9
III. ...	3	1	5	2	2	3	3	2	1	...	22
IV. ...	8	2	9	6	5	7	6	6	6	1	56
V. ...	18	9	16	12	10	6	5	6	13	1	96
Total ...	32	13	37	21	18	18	18	14	20	2	193

The density is far from uniform, as can be seen from the figures for each compartment in Appendix *D., vis.* :—

	No. of trees per acre.
Kanásar, 1st-class forest of deodár and kail	327
Mohna 4, closed 2nd-class forest of karshu	245
Bajaméra 1 „ „ fir	317
Matkángra 2 „ „ bán	144
Missau 7, open 2nd-class forest of ban only, just fire protected...	60
Karali, 2nd-class forest of chír open to fires and grazing ...	03

The density is also extremely variable in different parts of the same compartment, and, as a rule, with the exception of karshu forests, it is much less at southerly aspects than at northerly ones.

State of the Reproduction.

65. Perhaps the best means of obtaining a general idea of the state of the reproduction in these forests will be to compare the number of 3rd, 4th, and 5th class trees, with those of the 1st and 2nd classes, *i.e.*, of the seed-bearers, in the three great divisions of the forests, *viz.*:—

(1) Forests closed to fires and grazing.
(2) Ditto to fires only.
(3) Forests open to fires and grazing.

The following table then shows the proportion between the smaller diameter classes and the 1st and 2nd classes, which together represent unity :—

Name of species.	Forests closed to fires and grazing.			Forests closed to fires only.			Forests open to fires and grazing.		
	V. class, 3″—6″.	IV. class, 6″—12″.	III. class, 12″—18″.	V. class, 3″—6″.	IV. class, 6″—12″.	III. class, 12″—18″.	V. class, 3″—6″.	IV. class, 6″—12″.	III class, 12″—18″.
Deodár ...	7·5	4·0	0·9	4·2	1·8	0·7	No deodár forests of this class.		
Kail	20·2	4·8	1·1	8·2	2·5	1·0	1·0	1·0	0·9
Chír	No chír forests of this class.			6·5	2·0	0·7	0·4	0·7	0·6
Firs	4·9	2·5	1·1	6·1	3·0	1·2	No fir forests of this class.		
Bán	2·7	2·7	1·0	2·0	2·4	1·1	0·7	1·4	1·0
Ayár and buráns ...	12·0	10·0	1·8	8·7	9·1	2·0	10·9	11·9	3·2
Kukát	39·6	15·6	2·2	20·0	12·4	2·6	19·1	11·7	2·8

The number of 5th class kukát is relatively high in each case, but a large number of them are mere bushes and can never attain to 1st or 2nd class dimensions.

It will be observed that the forests open to fires and grazing are sadly deteriorating, since the number of 5th class trees ought almost always greatly to exceed the number of 1st and 2nd class ones in irregular forests, such as those we are dealing with here. The only exception is in the number of young ayár and buráns, and as these almost worthless species are always associated with bán oak, it would seem as if under the *régime* of fires and grazing they are gradually usurping the place of the more valuable oak.

In the forests closed to fires only reproduction, though vastly superior to that in the non-fire-protected parts, is yet not so good as in those closed to grazing as well, with the solitary exception of the firs. The reason for this exception lies doubtless in the fact that all the closed forests, besides being often very dense, so that seedlings are not required, are at high altitudes and at cold aspects, where reproduction becomes difficult and seed years are rare, whereas the open fir forests are lower down, many of them being below 8,500 feet.

In the open blocks the irregular manner in which the forests are reproduced is greatly enhanced by the erratic way in which they are grazed. The cows and bullocks graze all the year round within a few miles of the villages, as do also nearly all the goats, for the latter can stand being housed and thus furnish valuable manure for the various grain crops. The sheep, on the contrary, are constantly on the move, all those of one khat usually grazing together. In the winter they go down to the bottom of the valleys below the snow and in the summer they are brought up to the high-level pasture lands between 8,000 and 10,000 feet, where they remain from June to October, going once to the villages to be shorn. Throughout the forests there are regular halting-places for these flocks, called "taches"; these are open grassy blanks with gentle slopes surrounded by small pillars of loose stones, on which the shepherds light fires at night to ward off wild animals. There are, then, numerous congested grazing centres scattered throughout the open forests, and other heavily-grazed areas in the immediate vicinity of the different villages, whilst there are also considerable areas where grazing is very slight or almost *nil*, the latter being the case on very precipitous ground or on less steep places to which access is difficult. It has been observed along roads leading to water or to other grazing-grounds that the slopes above are often full of seedlings, whilst those below contain scarcely any, the explanation being that the flocks in going to and fro do not climb up the steep cut banks, but almost invariably graze along the slopes below the oaths.

In the kail zone reproduction is so vigorous that it is only close to "taches" or other heavily-grazed places near the upper limit of the species we need fear for the future of the forest. In such places there are numerous grassy blanks so closely cropped that the grass forms a dense turf, reminding one of English downs. Here, and it is the same for rai, the scattered kail and deodár seedlings are much browsed down and kept in the

form of bushes with branches spreading out in all directions until the centre gets beyond the reach of a goat, when a strong leading shoot is sent up. Over the more lightly-grazed areas reproduction, although greatly checked, as is proved by the figures in the preceding table, is so powerful and vigorous that we need not fear for the future of the forest, although its potential yield is certainly much lessened.

As to chír, there are no areas protected from grazing in the range, but the benefits of fire protection are even more marked than in the case of any other species, excepting perhaps kail, and the small portion of the Raura block stocked with chír, which has been protected from fire since 1872, contrasts most favorably with the surrounding burnt forests. Now that the number of cattle, sheep and goats to be admitted to our forests is about to be fixed, it will probably never be necessary to close the chír areas to grazing, provided that fires can be excluded with the aid of the graziers themselves. Of course there will be small, heavily-grazed areas which may have to be closed for a time, but it is hoped that, thanks to the wonderful reproductive powers of this pine, closing to fires alone will assure the maintenance of the forests.

However destructive indiscriminate grazing may be in a coniferous forest, it is still more dangerous amongst oaks, for goats like nothing better than succulent young oak leaves. Nearly all the bán oak forests are close to villages, and thus grazing is continuous in them throughout the year; the result is that reproduction is most backward and the young seedlings are contorted, badly grown and frequently reduced to mere bushes, thanks to the persistent nibbling of the goats.

The karshu forests, being the most remote of all forests from villages and being only grazed over occasionally in the rains, are in a much better state, and seedlings of all ages are very numerous at all more or less southerly aspects. Young moru are also frequently to be seen forming dense thickets on the lower side of the parent trees.

At Kálsi reproduction is usually very backward for nearly all species except sál, recent seedlings especially being rare and often totally absent, whilst there are established seedlings of gosám, kukát and others in many places, but very few of bákli and haldu. There is, on the contrary, splendid reproduction of sál where this species occurs, the ground being often literally hidden by innumerable yearlings, but it is to be feared that most of them will be trodden down by cattle.

Causes of injury.

66. *Man and animals.*—The chief causes of injury by man, such as fires, grazing domestic animals, making clearances for cultivation and lopping trees for fodder or for bedding, are discussed in detail elsewhere. Other customs have been altogether stopped, such as tapping for resin, taking large strips of bark off the trunks of fir trees for roofing temporary huts in the forest, and hacking green deodar and other conifers for fuel or torches.

There are very few wild animals in these forests and the damage done by them is not very great. Bears peel off the bark of young kail and deodár at certain seasons of the year and break down big oak branches in their search after acorns. Flying squirrels feed almost exclusively on acorns and young oak leaves. Lungúrs feed partly on acorns and on young fir cones, especially those of morinda. Rats and mice often eat a great many of the seeds sown in pits, and many blanks were made amongst the chír and kail sowings at Lurli from this cause.

The ill-success of the kail sowings at Bodiár is due in a great measure to pheasants, which are very fond of pine seeds and also dig up many of the recently germinated seedlings. The Himalayan nut-cracker is very destructive to kail and other cones whilst they are still on the trees, but these birds are not so common here as they are farther in the interior. Grosbeaks are similarly destructive.

Not much is yet known about the insects in these forests, but some of them by their numbers do a considerable amount of damage. The fruit of *Pistacia integerrima*

is so much attacked by weevils that it is very difficult to get good seed In the same way last year a portion of the pure karshu forest in Mohna 4 was sown up with acorns, the result being an almost complete failure owing to the fact that nearly every acorn contained one or more caterpillars belonging to a species of carpocapsa and closely allied to the codlin moth, whose larvæ are so injurious to apples. These acorns are also attacked by gall-flies, and in future sowings it will be advisable to collect the acorns from some other locality and to examine them carefully, the diseased ones generally having a small perforation like a minute pin-hole somewhere on the surface. The young and tender top-shoots of the morinda are frequently killed by some species of aphidæ which surround the young stems and suck out all their juices, but ladybirds, which are numerous, help to keep them down. The buds of the rai are pierced by a species of cynips, the resulting gall being the facsimile of a fir cone in miniature. Oak galls are also pretty common, and there are others on indigofera, roses, &c. The grub of a beetle, probably a cockchafer, is a great pest in deodár nurseries, destroying the roots of the young seedlings.

67. *Fungi.*—Dr. Mayr, during his visit to Jaunsár in 1886, made the following notes: "In the Lurli plantation there are two kinds of fungi dangerous to the young Pinus longifolia. The first, *Hysterium pinastre*, kills the young plants in winter and spring when not quite one year old, the needles becoming perfectly red. The needles are first green with yellow spots which spread out and color the whole needle red. If all the leaves are attacked the plant is killed. As a rule about 5 per cent of the plants in a nursery escape because the uppermost leaves are not attacked. The attacked leaves fall to the ground; and in wet soil the fungus begins to ripen, the yellow spots becoming perfectly black, and the epidermis opens in a longitudinal line, the spores of the fungus being shot out, so that at any wet season infection can take place, though generally only when the young leaves are produced. The infection generally attacks the young plants next season, leaving about 5 per cent., and these when three years old escape entirely if isolated, but not if in clumps, as the spores cannot reach them. This fungus is entirely parasitic on the needles of one, two and three-year-old plants and only saprophytic on the fallen needles of all pines. It only attacks two and three needle pines, especially the latter. No preventive measures can be adopted except to isolate the plants as soon as possible, to plant out in the first year and to make small nurseries.

"The other fungus is *Peridermium Pini*, but alternates with *Coleospermum Senecionis*. The latter appears in the winter on the dead leaves of a senecio lying on the ground, forming a yellowish spot. The winter spores are close together in a mass. These spores begin to germinate in spring, form a little tube with a spore at its extremity, which is blown to the new leaves of a pine of any age, up to 15 or 20 feet in height. It germinates on a pine, entering the stomata, and grows on the needle, forming a stroma, like the preceding fungus, on the surface of the needle. The fungus mycelium forms a bag protruding through the epidermis of the needle and filled with orange spores which are blown by the wind on to the leaves of a senecio. If the fungus attacks one-year-old seedlings, needles and stem they are killed. Two-year-old plants regularly escape and older plants are attacked, but do not suffer. The mycelia can live in the needles for two or three years and produce stromas, but for a new infection senecio spores are necessary: hence destruction of *senecio* is all that is necessary. The fungus sometimes attacks the bark of older trees through a wound by an insect, &c., and then it is perfectly perennial, living in the bark and sapwood. The fructification is exactly the same as on the leaves. Branches and young plants are killed after three or four years, terminal shoots after five years. The upper parts of large trees are killed after a long fight, the wood trying to beat the fungus and forming a flat-shaped tree."

Peridermium acicolum is a fungus abundant on rai and is described by Mr. Baden-Powell as a growth like a series of small flat sacs, or flattened teeth, growing out of the needles, and of a salmon color; the outer sac is waved and regular and the size as

to breadth variable. The needles are also covered with brown spots. The fungus grows till the leaf turns quite yellow, and you can distinguish the trees at a distance by these yellow tassels. In this state the envelop b irsts, distributing an orange-colored powder and leaving ragged fragments of the pellicle attached to the dead or dying needles.

The branches of *Pieris ovalifolia* (ayár) are frequently covered with a brilliant magenta fungus like mass. This is a curious condition of metamorphosed tissue, in which cells are extended in the form of thick-clubbed hairs, in this instance of a beautiful magenta color The condition thus represented is very common in temperate countries on the leaves of deciduous trees, and formerly was regarded as a fungus of which there were many forms described under the name of *Erineum*. This peculiar disease has never been satisfactorily explained, except to show that it is an extension of the tissues of the plant itself and not a parasite.

The disease which bursts through the cuticle of the leaves of *Rhododendron arboreum* and along the mid-rib much more resembles a fungus. The gregarious convex bodies are of a waxy consistence and appear to spring from the ligneous portion of the petiole. They are entirely composed of compact separate threads, closely adherent in a mass. There is no mycielum and no spores, no evidence of a fungus. As far as we can judge this is entirely a condition of atrophy. What is the predisposing cause is not apparent. It may be that the stimulation has been caused by the puncture of an insect.

68. *Climbers, creepers, &c.*—These in the upper forests, unlike the maljan and others in the sál areas, do little or no damage. The commonest of the climbers and creepers are, *ivy;* vines, particularly *Vitis himálayana; Schisandra grandiflora* and *Ficus scandens*. These perhaps do more good than harm by keeping the trunk moist and killing off the lower branches.

The chief parasites are the mistletoe, *Viscum album*, which is very common on apricot trees, but is never found in the forests, *Viscum japonicum* and *Loranthus vestitus*, both found on the bán oak.

The dense herbaceous growth consisting of balsams, Labiates, *Dipsacus, Polygonum* and others offer a considerable check to natural reproduction, as do also brambles, roses and other shrubs as well as the two ringáls. Perhaps, however, the most inimical plants in this way are the *Strobilanthes*, of which the two commonest species in this range are *S. Wallichii and S. alatus*. Brandis says that the former is a remarkably gregarious plant, covering extensive areas, to the exclusion of other plants, under the deep shade of the karshu forest of Snow View. In Hajawa and elsewhere it is found under spruce and silver fir. It is an undershrub, the stems subdivided into numberless branches which are jointed and break off readily at the nodes. In spring the tufts of this plant are two to three feet high, and present a mass of short stiff twigs, half woody, with small, cordate, nearly glabrous leaves. At the commencement of the rains these tufts shoot forth the long herbaceous branches bearing flax panicles of blue flowers. The other species is found on more sunny slopes, and is common in the warmer part of the Mohna block, while it is almost unknown on the cooler slopes of Hajáwa. The plant is perennial, but the stems and branches are herbaceous; the leaves are larger, long-acuminate and very hairy with glandular hairs.

Mr. Smythies in his school notes for this season says: "Every year the upper herbaceous portion of *S. Wallichii* breaks off at the node, leaving the woody stem beneath, which increases in length by one or two inches annually until at the time of flowering, when the plant dies. The woody portion is two to three feet high, the height of the whole plant being about five feet. The last seeding took place in 1881-82; the new shoots and the woody portion are now from six to eight inches high and about six years old. When the next flowering will take place we do not

know, but it is believed that the whole term of this plant is about 12 years. In all probability it is only when this plant dies down that the young karshu seedlings are able to force their way successfully through the dense network formed by their roots. It is a favourite fodder for sheep. When this species flowered in 1881-82 a piece of ground at Snow View was entirely cleared of it before the capsules ripened ; this spot remains clear and is now covered with karshu seedlings."

69. *Storms and snow* —A few trees are yearly uprooted by the winds, especially in the winter months, but the damage done is never very great. Trees are not uncommonly struck by lightning, especially tall conifers, the course of the fluid being usually marked by a narrow strip cut out of the bark as if with a knife, although sometimes the trees are shattered to pieces. Fires have originated from this cause and one is said to have occurred this year near Lambatach.

Hailstorms are rather violent in the spring and often destroy unprotected seedlings and break the tender top-shoots of some of the conifers. They are so destructive to the fruit crop that it is found necessary to cover the tops of all the trees in the forest garden with matting.

Snow-breaks are common in the higher forests, and long narrow gullies denuded of trees are formed down many of the forests, notably at Hájawa and Bajanára, by the glacier-like action of the snow, which is also the cause of the curved stems so noticeable in most of the young trees.

Thanks to the geological formation, landslips are very rare and the mountain torrents usually keep to their beds even after the heaviest rainfall.

Minor Produce.

70. *Ringáls, &c.*—Of the two ringáls, the larger, *Arundinaria spathiflora*, is alone of much commercial importance, and it is largely exported from this range to the plains for hookah-stems, whilst a few are used for trout fishing-rods and some other purposes. The large ringál flowered in 1881 and very numerous seedlings have sprung up since, but no culms have yet been sent up from the new rhizomes. It flowered previously in 1848 and in 1863, so that its period of life is from 15 to 18 years. The small ringál, *Arundinaria falcata*, flowered in 188) with similar results.

Immediately after the flowering the export of the large ringáls mounted from 5,154 to 19,769 score, endeavors being made to extract as many as possible of the dead stems, and this extraction has been continued ever since until the supply within ten miles of Chakráta has been almost exhausted. The right to cut these ringáls is now let yearly to a contractor and should in future be sold by auction.

There is but very little other minor produce, and this chiefly from Kálsi, including bákli and dháura leaves, limestone and quarrystone, whilst from the upper forests come bundles of the maiden-hair fern, hansraj, *sp.*, *Adiantum*; seeds of Vernonia *anthelmintica*, kalijiri ; dried rhizomes of *Acorus calamus*, bach ; root of *Aconitum heterophyllum*, atis; root of *Hedychium spicatum*, kapur-kachri ; excrescences on leaves and petioles of *Pistacia integerrima*, kakra-singi, and roots of *Thalictrum foliolosum* or *Cessampelos pareira*, pelijiri. Truffles are not uncommon in the autumn, especially in fire-protected areas under thickets of young deodar. The boys who tend the sheep and goats find them by going on all fours and following up their scent like a dog.

CHAPTER V.

Past Management.

71. *Fellings.*—To meet the demands enumerated in chapter VI. the following operations have been carried on in these forests since the formation of the Chakráta Cantonments.

From 1869 to 1873 the Commissariat Department cut and carried their own fuel from the Deoban forests, and with the exception of a small quantity in 1872, all was cut from dry trees. Since the beginning of 1874 the wood has been delivered by the Forest Department.

72. For the supply of the station from 1869 to 1873 dry wood from a certain area was cut, collected and sold by different contractors, but the dry wood near Chakráta having become exhausted this arrangement broke down, and consequently June, 1873, in the Forest Department undertook the cutting and carriage of the wood, handing it over to a contractor at Morrow's Neck and at the Sadr Bazár, but next year, in June, 1874, the wood was sold direct to consumers by the Forest Department at Morrow's Neck. At the same time the Cantonment Committee commenced to collect dry and fallen wood in Cantonments and to sell the same by retail in the bazár.

73. Fuel is also required by the Military Works Department for lime-burning at Pandáwa, Chakráta, and Kurwa. In the former forest the trees are marked only by the Forest Department, and at the two other places the fuel is delivered at the lime-kilns. The following statement gives the supply of fuel for all purposes since 1870-71. The wood supplied to the Military Works Department was from green trees, but the 410,000 maunds supplied to the troops and residents from 1870-75 was, with the exception of about 7,000 maunds in 1872, exclusively the produce of dry and fallen trees and of tops, branches and other refuse from sawing operations.

STATEMENT SHOWING APPROXIMATELY THE CONSUMPTION OF FUEL IN CHAKRÁTA FROM 1870-71 TO 1885-86 (NOT INCLUDING FUEL AT KALSI) AS DRAWN FROM THE JAUNSÁR FORESTS.

Year.	Commissariat Department.	Bazár and residents, &c.	Military Works Department.	Total.	Remarks.
	C. ft. solid.	C. ft. solid.	C. ft. solid.	C. ft. solid.	
* 1870-71 ...	133,420	44,200	...	177,620	* In these years the station contractor sold part of the wood made over to him for sale to residents, to the Public Works and Commissariat Departments.
* 1871-72 ...	104,506	43,354	6,958	154,818	
* 1872-73 ...	148,386	64,964	138,236	351,586	
1873-74 ...	97,020	32,370	200,612	330,002	
† 1874-75 ...	140,016	11,948	6,464	158,428	† In this year part of the station requirements were met from the stock in hand from the previous year and from dry wood collected within Cantonment limits.
1875-76 ...	110,000	10,000	16,381	136,381	
1876-77 ...	128,603	19,685	...	148,288	
1877-78 ...	101,270	22,776	...	124,046	
1878-79 ...	131,850	20,115	3,815	155,780	
1879-80 ...	104,408	9,089	...	113,497	
1880-81 ...	81,847	5,815	...	87,662	
1881-82 ...	1,15,736	24,746	666	141,148	
1882-83 ...	89,093	11,300	6,500	106,893	
1883-84 ...	79,107	9,899	8,066	97,132	
1884-85 ...	56,587	4,105	4,667	65,359	
1885-86 ...	82,981	19,139	14,410	116,480	
Total ...	1,704,820	353,505	406,775	2,465,100	
Average, 16 years,	106,551	22,094	25,423	154,068	

Omitting the years 1872-74, when some of the fuel probably went to the Commissariat, the normal requirements of the Military Works would be 4,852 cubic feet, but this is probably much below the reality.

The particulars given below of the amount taken from each block were obtainable with difficulty and can only be considered as approximately accurate, and do not represent the entire quantity of fuel cut :—

Years when fellings were made.	Name of block.	Fuel cost.			Remarks.
		Oak.	Fir.	Total.	
		C. ft. (stacked).	C. ft (stacked).	Rs.	
1875-86 ...	Mohna ...	444,310	401,275	8,45,585	
1877 ...	Bodiar ...	...	22,000	22,000	Firs thinned to encourage deodar and oak.
...	Konain ...	1,250	39,250	40,500	Refuse from sawings.
...	Dara ...	15,525	17,760	33,285	
1877-85 ...	Matkángra ...	2,225	...	2,225	
1877-86 ...	Thona ...	...	105,580	1,05,580	Including many dry trees and refuse from sawings.
1879-88 ...	Kanjátra ...	...	40,850	40,850	
1880	Asnári ...	...	10 300	10,300	Dry trees.
1880-85 ...	Hajáwa ...	1,150	306,530	3,07,680	
1882-85 ...	Kurwa ...	24,020	...	24,020	Nine acres coppiced.
1883 ...	Jádi ...	1,400	300	1,700	
...	Ekra ...	...	2,100	2,100	
1884-86 ...	Kopti ...	1,450	174,750	1,76,200	
	Raura ..	...	Uncertain.	...	Supplied to the Rifle Range.

The number of trees felled can only be obtained for certain blocks, and as the figures are not reliable they have not been given.

Mohna has now been worked through once with the exception of compartments 1 and 3, and work has also been completed in the closed portion of Hajáwa, compartments 1 to 4, except the eastern part of No. 1. The stocked part of Mohna, from which fuel has been taken up to 1886, has an area of about 400 acres and the area of the four compartments in Hajáwa is 452 acres, so that the outturn per acre from these two blocks has been 2,112 and 681 stacked cubic feet respectively ; but both these forests are particularly good ones and much above the average. The fellings for fuel have, since 1876 been conducted on the principles laid down in the Inspector-General's Preliminary Working Plan of the Deoban Working Circle.

76. The timber supplied to Chakráta in the shape of deodár and rai scantling averaged about 35,000 cubic feet yearly from 1869 to 1876, whilst the station was being built ; the greater part of the deodár coming from Bodiár, where about 2,000 trees were felled in the three years 1869-72 Since then Chakráta has been supplied from Konain, Bhujkoti and Panikanál, but no reliable figures as to the quantity obtained from each block are available. Since the completion of the barracks, &c., the quantity supplied has diminished considerably and may be stated as follows, the rai timber coming chiefly from Kanjátra, Thona, Bodiár, and Konain :—

Year.	Deodár scantling.	Rai scantling.	Total.
	Cubic feet.	Cubic feet.	Cubic feet.
1876-77	20,396	8,283	28,679
1877-78	17,053	3,227	20,280
1878-79	6,168	173	6,341
1879-80	1,920	365	2,285
1880-81	419	5,308	5,727
1881-82	752	2,026	2,778
1882-83	3,982	786	4,768
1883-84	1,663	2,075	3,738
1884-85	5,573	995	6,568
1885-86	4,160	1,263	5,423
Totals	62,086	24,501	86,587
Average per year ...	6,208	2,450	8,658

77. Trees have been given to villagers under free permits throughout the range, but no accurate records have been kept until quite lately.

78. The trees for the villagers and some of the oaks required by the Military Works Department for lime-burning are marked and made over standing, but otherwise everything is worked out departmentally.

The deodár required for timber are cut down and allowed to season for a year or two, and they are sawn up into scantlings of various sizes in accordance with the indents of the Military Works Department. The sawyers employed are often Panjábis or Pachmis, local labor of sufficiently skilled men not being always procurable.

The trees required for fuel are marked by the Divisional Officer in certain compartments and contracts given to local men who fell, log, and cut them up into two-feet lengths splitting the larger pieces. The fuel thus prepared is stacked in the forest close to fuel-carrying roads, which have to be made wherever necessary, in stacks containing 200 stacked cubic feet, the stack being 20 feet long and 5 feet high. The fuel is measured up and handed over to the fuel-carrying contractors, of whom there are two, both of them from Ladak and commonly called Aughanis. By them it is carried on the backs of mules and ponies to the two fuel godowns at Chakráta, in which it is stacked by another contractor, and remains under the care of the forest subordinate in charge of the depôt until handed over to the Commissariat Department or sold to residents. Transport is the great difficulty, all the fuel for Chakráta having to be brought on the backs of mules or ponies and all timber on the backs of men for a distance of from 3½ to 10 miles for fuel and 13 for timber.

Protection from fire.

79. With the exception of some grassy slopes which the villagers are permitted to burn and the oak forests in Ekra Kulered and Amlokri, nearly the whole of the working circle is protected from fire. Protection began in 1869, with the 1st class forests, as well as Mohna and Thona, and in 1872 was extended to nearly all the other 2nd class forests, and practically no large areas of any value, except the oak forests mentioned above, have been burnt since then, as can be seen from the following statement :—

Number of block	Name of block.	Area attempted	Failures	Area protected	Area open to fires	Remarks
		Acres	Acres	Acres	Acres	
	Kálai (part of)	1,915	..	1,915		The remainder of Kálai forest, 2 661 acres is not shown, but fires are prohibited, although no fire lines are burnt
	Kua, Singhori, Kotha, Kurwa, Bándla, Raura	775	..	775	.	
	Inári	99	..	99	403	
	Bodiar .	1,463	29	1,434	.	
	Molla	1,160	..	1,160		
	Missau	1,313	.	1,313		Most of compartments 6 and 7 only recently protected
	Chátri ...	586	42	544		Protected for first time and fire lines cut in 1887
	Kanésar	173		173		
	Kopti .	406		406	.	
	Asnari ..	380	5	375		In 1882 83 a fire.
	Marauwa . ..	470	55	415	170	In 1882 83 "
	Thona .	461	4	457		Fire in 1879 80
	Kuintar	215		215	56	
	Kanjátra . . .	629		629	14	
	Jadi	937		937		
	Darna	367	1	366	259	Fire in 1880 81
	Matkangra ..	686	62	624	.	Fires in 1880 81 and 1883 84.
	Mohna .	1,071		1,071		
	Durám .	764	86	678		Fire in 1886 87
	Ekra				1,026	Includes some good pieces of oak forest
	Kulered		..		595	Ditto ditto
					518	Ditto ditto
	Amlokri ..					
	Danda . .	143		143	94	Protected for first time in 1887
	Hajawa	861		861	180	
	Dulsana	367	..	367	448	
	Pandáwa	404		404		
	Rikta	536		536		
	Konain .	529		529		
	Legúna	814		814	110	
	Bajamara	426		426		
	Karáli	275	15	260	314	Fire in 1883 84
	Siári	341	..	341	90	
	Gutugad ..	468	..	468	..	
	Bhujkoti	330		330		
	Lurli, Sutoh, and Forest Garden	561	20	541		Fire in 1882-83
	Pánikanal	740		740	151	
	Karáfuda .	2,050	70	1 980	105	
	Total	22,715	380	22,335	4,533	

Fire protection has therefore been a great success, the only fires which have occurred having usually been small ones, due to such causes as carelessness on the part of the subordinate establishment in burning the fire-lines, to a high wind, in one or two instances to shepherds and charcoal-burners, and in 1883-84 a fire was caused by some villagers whilst burning a dead body, but no case of incendiarism has ever occurred. There are two dangerous seasons, one from soon after the end of the rains until the first fall of snow, and the other from March to the setting in of the rains. An early fall of snow and frequent showers in April and May are, however, great helps in warding off fire, and except in the lowest parts and on hot grassy slopes there is usually very little danger. Lines from 10 to 20 feet broad are burnt all around the outside of the forests, and there are also interior lines at Bodiár and Kanásar.

The annual cost varies between 3 to 4¼ pies per acre successfully protected.

For an account of protection from grazing, lopping, &c., *vide* chapter II. on Forest Privileges.

Areas sown or planted.

80. An area of about 678 acres has been sown or planted up in the range in numerous different blocks as detailed in Appendix D., and in addition 52 acres have been sown up in lines under forest in Kanjátra, Hajáwa and Mohna, whilst 69 acres have been planted up in the Cantonment blocks (*vide* para. 59).

Most of these plantations have been visited in three successive years, 1885-1887, by students from the Forest School, countings and measurements being made to determine their relative success, and the figures thus obtained will be given below.

81. (1) *Kurwa.*—In 1873-74 some Australian acacias were planted and in the following year it was stated that 129 only were alive, but they were flourishing; none, however, now remain. Sowing of inai (*Q. annulata*), a few trees of which are to be found amongst the natural stock, were made in 1874 and 1875 in both compartments, some bán being also dibbled in one of the plots. In 1883 some of the old pits were sown with acacias (A. *melanoxylon*, *implexa* and *decurrens*), and although some germinated, they have since all died. In 1885 the average height and girth of the inai seedlings were 36 and 2 inches respectively. In this year sowings were made in coppice sub-compartment 13 in lines of patches six feet apart from centre to centre, lines being sown alternately with deodár, oak, and kaik. The seed germinated in August, but the percentage of success was only 29 6.

82. (2) *Bodiár.*—In his "Suggestions" regarding this forest Sir D. Brandis says:—"Here considerable progress has been made in raising deodár, and it may be said that both the systems of sowing in patches and of transplanting from nurseries is now well understood, and that in favourable localities failures are now the exception. The first attempt at planting was made in 1872, when Mr. Whittall, then in charge of the Deoban range, began sowing in horizontal lines three feet apart, which were dug up continuously along the slope of the hill on all aspects, and sown in November and December of that year. In 1874 this system was considered to have failed, and nurseries were established with a view of employing transplants. The first nurseries were established at the bottom of valleys in localities exposed to frost; the nurseries were not properly prepared, and these operations were failures. Nurseries on an improved plan and in more favourable localities were established in November and December, 1874, and they were added to in 1875. The seed was sown in November and December, 1874 and 1875, and the young plants were bedded out in the rains. A few were planted out in the rains of 1877, but planting was stopped because the rains ceased early. The majority of the plant were put out in the rains of 1878 and appear to be doing well. In November and December, 1875, another system was commenced. On favourable slopes patches were dug about 10 feet apart, and in each patch about 40 seeds were sown, and these patches have succeeded well. In 1876 patches were made in continuation of the former lines in the Bodiár bay, both on

favourable and unfavourable slopes; the former succeeded, the latter were a failure. In 1877 patches were made on favourable slopes in the Thona, Romuwa and Bodiár basins, about 15 seeds being sown in each patch in November and December. Shelter was given by branches in all exposed places early in spring, and the success has been good, due partly to the favourable rains of 1878.

"A large area was planted up in 1878 79, the plants having been raised in nurseries from seed sown in 1874 Upon the whole the success of this operation has been good, but numerous plants have died, and those which survive have not made much progress It is believed that the roots of these plants were much damaged in the process of transplanting."

In 1879 80 about 6,800 deodár plants five years old were put out. It was quite impossible to extract these old plants without damaging the roots. One plant with a tap-root going straight down was dug up at a depth of four feet, the root breaking off at this point and leaving probably two feet more in the ground Most of the plants taken up had thick roots broken off at two feet from the surface. It was attempted to remedy this by forming a nursery bed with a hard bottom of stones and gravel well beaten down like a lawn-tennis court, and over this fine earth was spread to a depth of nine inches, and the young plants put out in lines three inches apart and in lines one foot apart In 1881 these plant and others grown in the usual way, both from sowings of 1878, were put out in Gánwa, the two kinds being planted in separate but adjoining places on the same slope, the lines were 15 feet apart and the plants three feet apart in the lines.

In July, 1884, about 450 large cypresses from the nursery were planted out in Plantation I of 1878, and numerous pits have been dug of late years amongst the older plantation and sown with kail seeds, pits in which deodár had failed being also cleared and sown with the pine. They usually germinated well, but great damage has been done by pheasants and other birds eating the seeds and rooting up the young plants The pits containing deodar have had the grass cleared around them and have been drained yearly since 1885.

Some measurements made in 1887 gave the following average results —

	Height of deodar	Girth of deodar	Height of moru	Girth of moru	Height of kail	Girth of kail
	Inches	Inches	Inches	Inches	Inches	Inches
1875 nursery	187	8 3	..	..		
1878 ditto	132	9 0	..	..		
1878 plantation below bungalow	44					
1879 ditto ditto	47 5	3 1	48 5	2 5	7 8	8 3
1881 ditto path	34 1	2 1				
1881 ditto above path	23 4	1 8				

The 1881 plantation is a great success, the growth being better below the road owing to the protection afforded by a thick growth of *desmodium* and *indigofera*.

83. (3) *Kandsar* —In 1873-74 it is stated that 119 acres were planted and sown up. In one portion, on a steep slope with a westerly aspect, kail was sown, and the plantation being surrounded by a number of large deodár and kail trees, natural reproduction is rapidly filling up the gaps between the transplants, which in 1886 had an average length of 9′ 10 2″ and girth of 9 4″.

On the same face of the hill, but a little lower down, deodar and kail sowings were made in 1874, and the place is almost everywhere crammed with saplings, natural and artificial.—

		Height	Girth
Averages	Deodár	9 =9 8	6 8″
	kail	10 =8 4′	9 2″

In 1875-76 over about 20 acres morn acorns were dibbled in and some 600 deodár were planted out alternately with these.

84. (4) *Thona.*—This plantation, which was made in 1874, consists of karshu, rai and kail, sown or planted in pits, whilst some sowing in lines was also done. The lines which were sown up were 12 feet apart. Although some of these lines, especially of kail, are very full, the plantation cannot be considered a success, and the karshu are too isolated. In 1886, a few lines of deodár were sown in the immediate neighbourhood and shelter of the kail lines. The following measurements were made by the students.

Name of species.	Average height.		Average girth.	
	1885	1886	1885	1886
Kail	6′ 5·4″	7′ 4·5″	7′ 9″	7′ 5″
Rai	...	3′ 4·1″	...	3′ 2″
Karshu (above road)	...	3′ 7·8″	...	4′ 0″
Do. (below road)	...	3′ 5·0″	...	3′ 0″

85. (5) *Kanjátra.*—In 1884, one acre was planted with deodár and kail in lines five feet apart.

In 1885, rai and morinda were sown below the Bodiár road in alternate lines one foot wide and six feet apart, and morinda was sown alone above the road. The total length of the lines is 18 miles. The percentage of success varied from 34 to 45 for rai and from 40 to 66 for morinda in the following year, when 35 seers of rai were sown in the blanks. This system takes 14 seers of morinda or 5½ seers of rai to the acre and the cost is :—

	Rs.	a.	p.
Sowing per acre	..	0	10	0
Strip-making (one man can prepare one chain in 20 minutes)	...	15	8	0
Collecting seed	...	0	8	0
Total	...	16	10	0

In 1885, about eight acres of blank ground below the mule-sheds were sown in alternate lines of pits 7′×5′.

86. (6) *Matkángra.*—In 1874, about 26 acres in compartment 2, below the Jádi road, were planted up with moru seedlings (two years old), the tap-roots being in many cases cut. The plantation is a complete success. Fifty saplings were measured in 1886 with the following result:—

Average height, six feet; average girth, three feet five inches.

The nursery is at the north-east corner of the plantation in some old abandoned fields. In some places the seedlings were never taken out and have grown up very thickly and fast. They are a good example of a complete canopy, when the lower branches begin to die off. Average height, eight feet three inches; average girth, eight feet two inches, *i. e.*, in the nursery the saplings are on an average two feet three inches taller and four feet seven inches thicker than in the plantation.

In 1875, horse-chestnuts were sown over about 3 acres in patches 8′×8.′

The moru plantation of 1875 is well stocked, but not so flourishing as that of 1874.

In 1884, moru was sown (10 acorns in each pit five feet apart) all over the old plantation (about 6 acres facing south-west which were sown in 1875, but failed). The seeds germinated well, but a number died down, and seedlings are now most numerous on the lower, gentler and moister slopes. The percentage of success in 1886, was found to be 52·1.

87. (7) *Mohna.*—Sowings and plantings have been carried on in a desultory kind of way in this block ever since 1874, when a beginning was made by Mr. Whittall, and a little over one hundred acres of blanks are now restocked in addition to numerous seedlings planted out under scattered forest growth. Various species have been used: at first amongst others rauns (*Cotoneaster bacillaris*), horse-chestnut,

maples, bird-cherry, spruce, silver fir, kail, and karshu. The raans and bird-cherry did not germinate well, and the former, being a mere shrub, was not very suitable for a fuel plantation. The horse-chestnut was quite out of its natural habitat on the hot dry slopes on which it was planted, and nearly all have died, the few survivors being now only about four feet high. The karshu sowings have succeeded well in many places, and the seedlings of 1874 are about five feet high. Rai and kail have also thriven, some old plants put out in 1878 having an average height of 11·2 feet for kail and 4·9 feet for rai.

Latterly deodár and kail have been the chief species used. The deodár sown in 1881 has done well at northerly aspects or where shelter has been afforded by kail or shrubs, but on slopes facing the south they all dried up. The deodár planted out in 1883 and subsequent years are also doing pretty well.

The karshu sowings in lines over 27 acres in Mohna 4, made in 1887, failed, all the acorns being worm-eaten, as noticed in paragraph 66.

88. (8) *Hajawa.*—Sowings were made in January, 1885, in lines of pits over three acres in compartment 4, with rai seeds from 20 to 30 per pit.

89. (9) *Bajamára and Leguna.*—Two small areas, about two acres each, situated in Bajamára 1 and Leguna 4, were planted up with deodár in 1878.

90. (10) *Konain.*—About 80 acres have been successfully planted up with deodár which are for the most part doing exceedingly well, but the records concerning them are very scanty.

91. (11) *Siari.*—At Chaulu thát in this block, 13 acres of fir forest were cleared in 1875, all moru and deodár being spared. The ground was planted and sown up with deodár in March, 1877, but many died, and the survivors are not over-vigorous. In 1881, owing to this partial failure, deodár was resown in 1,084 square patches 5′ × 5′, 500 seeds per patch; in 1883 there were, on an average, 40 seedlings per patch, and since then blanks have been refilled with transplants.

Coppicing.

92. The following areas have been coppiced up to the end of 1887-88 :—

	Acres.
Kurwa	22
Mohna	6¼
Kálsi	6
Total ...	34¼

Speaking of oak coppicing, Sir D. Brandis says that it is most desirable to determine exactly how far the three oaks which form important constituents in these forests, *viz.*, karshu, moru and bán, have the power of reproduction by coppice shoots. It is not likely that it will ever be found advantageous to grow any of these oaks in pure coppice woods; but it is quite possible that, in case they should be found to coppice freely, it might be found desirable to maintain the ground under coniferous trees stocked with oak coppice, and that the existence of such coppice growth would greatly facilitate the regeneration by self-sown seedlings of the coniferous forests. Broadly speaking, it is probable that the oaks have much too slow a rate of growth to justify their maintenance as component parts of the high forest, but it is quite possible that oak coppice will be found exceedingly useful to nurse and foster a young growth of silver fir, spruce, and deodár.

As will be seen from what follows, the coppicing of all three species has been tried, that of bán being the most successful, whilst moru has not succeeded so well, doubtless owing to the difficulty in finding an area with a sufficient proportion of young trees.

93. *Kurwa.*—Coppicing in this forest, where the stock is mainly bán, burans and ayár, was started in 1881-82, about half the area of the forest having been closed in 1881. Irregular patches were coppiced in 1881-82 and in 1882-83, where the area

was divided into 22 compartments of about three acres each. The coppice promises to be a success. Fellings have been made as follows :—

Year when coppiced.	Area coppiced in acres.	Portion coppiced.	Yield in wood stacked for.	Yield in charcoal.	No. of standards left.	Remarks.
1881-82 ...	7	Parts of sub-compartments 2, 3, 4, 8, 9, and 10.	8,490	Some made, but quantity unknown	35	Some of this charcoal was made from refuse wood in the previous coupès.
1882-83 ...	3	Ditto 4 and 5 .	9,470	...	30	
1883-84 ...	3	Ditto 5 and 6 ..	7,150	..	35	
1884-85 ...	3	Sub-compartment 12 ..	8,900	2,550	35	No area was coppiced in 1885-86, as the original intention was only to coppice one compartment a year, and this had been exceeded.
1885-86 ...	*Nil*	*Nil* ...	...	..	...	
1886-87 ..	3	Sub-compartment 11 ...	4,850	...	92	
1887-88 ..	3	Ditto 19	7,500	740	30	

The actual coppicing has always been done by daily labour, the cost being in—

	Rs.
1882-83	98
1883-84	75

The work is done in December and the strong and vigorous shoots of the avár are the first to appear in April, the others appearing later on. It was found in the two areas which were first coppiced that no shoots were thrown out by the very old stumps: consequently in 1883-84, and since, only the small young stumps were dressed, the large ones being left alone.

In 1886 and 1887, a number of the bán, ayár and buráns stool shoots were measured by the forest students, with the following results :—

	Year of coppice.	1886. Average height, inches.	1886. Average girth, inches.	1887. Average height, inches	1887. Average girth, inches.
Bán	1881-82 ...	33·8	1·8	53	3·2
	1882-83 ...	39·4	1·9	50	3·2
Ayár and buráns ...	1881-82 ...	...	...	99	5·9
	1882-83 ...	...	...	62	3·7

The standards in this area were covered with epicormic branches, which are to be trimmed up to a height of 12 feet or more. This year (1888), the open part of Kurwa was closed for the first time, and two acres were coppiced, but only yielded 750 cubic feet of fuel, or one-fifth of the yield of the closed part, this poor result being due in a great measure to the maltreatment of the forest by the villagers.

94. *Mohna and Jádi.*—The following plots have been coppiced for experimental purposes :—

Year when coppiced.	Area of plot.	Situation of plot.	Species coppiced.	Remarks.
	Acres.			
1873 ...	¼	Mohna 8, below the Deoban stables.	Karshu ...	Pollarded only, four feet above the ground.
„ ...	¼	In Jádi 9, above the Bodiár road,	„ ...	Ditto ditto.
1882 ...	1¼	In Jádi 9	„ ...	
„ ..	1¼	In Mohna 5	„ ...	
„ ...	¼	„ „ 12 near the Deothat nursery	Moru and karshu.	No shoots produced.
1883 ...	3	„ „ 8	Moru ...	Yielded 2,040 cubic feet of charcoal.
Total ...	6¼			

The pollarding in 1873 was done at the Inspector-General's request, as it had been observed that often old trees pollarded in sheep tashes produced thick strong shoots, and the idea was to see how pollarding karshu would answer, at the same time giving the natural seedlings light.

The measurements of a number of shoots in the second plot of 1873 last year gave the following average:—

	Height.	*Girth.*
Karshu	80 9″	2·1″
Kokat	44 6′	2 1″

The plot of karshu coppiced in Jádi 9 is stated to have been a success in the Forest School notes of 1885, the stools being young and being cut low down having thrown up shoots vigorously, their average height being 33 3″ and girth 1·7″. The other plot suffered much from frost during the first winter, and it is a question whether it would not be better if any more coppicing is done to do it in December, before the snow falls, instead of in April and May, as has been the case hitherto in Mohna. The shoots would then get a better start before the next winter. Mr. Fisher states that karshu is regularly coppiced in Bashahr for jhúm cultivation.

The moru coppiced in 1882 failed to produce shoots, probably owing to the age of the trees.

95. *Kálsi.*—Two plots of three acres each were coppiced in January last as an experiment to find out the yield per acre and to see whether it would be remunerative to work the forest as a coppice for the fuel supply of Chakráta. The first plot was coppiced in February, 1886, and the outturn was :—

	Stacked cubic feet.
Bákli	1,908
Gosám	1,080
Kokat	4,955
Total ...	8,003, or 2,668 stacked cubic feet per acre.

The following species have sent up the best shoots:—gosám, bel, morarphal, amaltas, Nyctanthes and some others, the average height of the gosám and bél shoots being about five feet.

In March last (1888), this fuel together with the standing trees minus the standards in the other three-acre plot was sold for Rs. 505. In the following table column No. 1 shows the number of standards left, column No. 2 the number of trees coppiced :—

Name of species.	V CLASS. 3″—6″		IV CLASS 6″—12″		III CLASS 12″—18″		II CLASS 18″—24″		I CLASS OVER 24″		Total.	
	1	2	1	2	1	2	1	2	1	2	1	2
Bél	71		41		2		...		...		114	
Sam	30		6	..	1						37	
Háldu	10		22		9		4	..	1	.	46	
Bakli ..	7	40	7	53	2	15	1	5	...	..	17	113
Gosám	7	34	5	21	2	14		4		3	14	76
Kokát	..	1,082	1	147	..	6		1			1	1,236
Total .	125	1,156	82	221	16	35	5	10	1	3	229	1,425
Bél . .	55		10		3	.	..	.	.	...	68	
Sam .	18		5				..		.	..	23	...
Haldu	12		5		2		1		1		21	...
Bákli .	5	52	8	41	2	8	.	2		..	15	103
Gosám	2	18	4	12		9	1	1		2	7	42
Kokat	.	903	3	153	,	13		2			3	1,071
Total .	92	973	35	206	7	30	2	5	1	2	137	1,216
Average per acre for two plots	30	355	20	71	4	11	1	2		1	61	440

96. *Other cultural ope ations*—In 1882-83 and in the following year, kail was girdled over about 40 acres of forest in the Konain block in order to favour the growth of deodár, which appears to have benefited by the operation. Oak stems injured by the winter storms and snow in Mohna have for some years past been cut back in the spring.

97. *Roads.*—In 1869, with the exception of the one to Simla, there were no roads at all within the range, and a great deal of time and labour was expended in getting about from place to place A glance at the *maps accompanying* this plan will show what a great improvement has been effected in this respect by the Forest Department. The four kinds of hill roads are shown on the maps thus :—

Passable for ponies { Main roads over 4′ wide—two parallel black lines with red colour between them. Fuel-roads about 4′ wide—one black line bordered with burnt sienna.

Inspection-paths from 1′ to 2′ wide—one black line bordered with burnt sienna.

Village tracks not cut—a black dotted line bordered with burnt sienna.

During 1869-70, 21 miles of mule tracks were completed at a cost of Rs 350 per mile, and the road made from Chakráta to Deoban, three miles, at a cost of Rs. 5,000, and road-making has been continued ever since.

A contribution of Rs 10 per mile is now made from the district fund towards the Chakráta-Tons road, a portion of which traverses the Deoban range and is the main thoroughfare in this part of Jaunsár.

In 1883-84 the sum of Rs. 5 was paid to the siyána of Kurwa for the right of making a fuel-road through village-land from the Chakráta cart road to the boundary of the Kurwa forest.

98. *Buildings* —The following buildings now exist in the range :—

Use of buildings	Permanent	Semi permanent	Temporary.
For officers	3	2	...
„ subordinates ...	8	3	1
„ offices, stores, &c.	4	2	...

The buildings for officers include rest-houses at Chakráta, Deoban, Bodiar, Kanasar and Konain, and when the head-quarters which are being built at Chakráta are ready, the accommodation for officers will be complete, unless it be found advisable hereafter to build a rest-house at Kalsi, which might have to be done if fuel works are regularly started there, and would be also of great service for the inspection of the Dakhpathar boom. For subordinates there are foresters' houses at Chakráta, Deobán, Konain and Bodiar, and there are forest guards' chaukis at Kálsi, Kurwa, Chakráta, Deoban, Konain, Kanasar, and Bodiar.

Two fuel sheds have been built at Chakráta, *viz* :—

		Rs		
Parade ground shed, original cost	...	5,000	capable of holding	53,000 stacked cubic feet
Kardir shed ditto	...	3,714	ditto	58,000 ditto
Repairs to end of 1885 (exclusive of royalty on timber)		1,046		
Total cost		9,760		

The sheds by the agreement, *vide* Appendix O, were to be considered the joint property of both departments, but their cost was to be gradually recovered from the Commissariat by an enhanced rate on the fuel ; and in his No. 2525 of the 16th of July, 1883, the Commissary-General of Bengal agreed to the repairs being effected by the Forest Department, the expenditure up to a limit of Rs 500 in one year being met by his department.

On the 31st of March 1885 there was a balance due by the Commissariat Department, on account of these sheds, amounting to Rs. 2,774.

99. *Camping-grounds.*—An encamping-ground (Tilwári) of 186 acres in exten was formed at Kalsi out of the forest area in 1872, and from that year came under the orders of the Superintendent of the Dún. The idea was to admit of the regiment from Chakráta being located there during the cold weather and to provide ample room for a Brigade parade-ground and exercise of all kinds.

The arrangements for the management of this camping-ground were sanctioned by G. O. No. 247A of 21st February, 1877, and are as follows :—

(*a*) The Executive Engineer will keep the camping-ground clean, the boundaries defined and the serai in repair, and fell any green trees that require felling, disposing of the same as may be ordered.

(*b*) the Tahsíldár will collect rents due from occupants of the serai, &c.

(*c*) The Forest Department will collect dues for grass, grazing and dry wood, and pay the same at a fixed valuation to the office of the Superintendent of the Dún ; it will also sell green wood when requested to do so.

(*d*) This arrangement to come into force on the 1st of April, 1877.

(*e*) The villagers of Kálsi and Haripur Biás to be allowed free grazing as promised at the settlement.

(*f*) An annual sum of Rs. 60 to be paid by the Forest Department for the grazing and fuel.

The arrangement by which the Commissariat Department pay Rs. 180 for grazing was agreed to in Commissariat Officer's No 581 of the 24th July, 1873. Rs. 15 were to be paid monthly for grazing dues for cattle and sheep, subject to a notice of withdrawal of two months Camel-grazing was not provided, as it was intended that they should graze in the Dún ; but camels coming with the regiment are exempt from dues, provided that they come with the regiment and go away immediately.

Camping-grounds for cattle have been fixed as follows :—

Tilwári.—Between pillars Nos. 19 and 20.

Bajrabai.—In the Amláwa block on the cart road.

Saiah.—In zamindári land, no Government forest being near at hand.

Kurwa.—On the cart road.

Jharna láni.—On the road from Chakráta to Deoban in Mat kángra.

Durání dhár.—In the Durani block.

Hujáwa.—

Pandawa.—Near Tons road, Pandáwa block.

There were two military encamping-grounds (cholera camps) in the Mohna and Thona blocks, which have now been abandoned, *vide* Quartermaster-General in India's No. 25928 of the 6th of June, 1884.

100. *Protection of game.*—The following acts are prohibited by the shooting rules issued under G. O. No. 303 of 28th February, 1880.

(*a*) Poisoning of water (*vide* para. 26, special privilege for Jaunsáris).

(*b*) Setting of snares or traps without permission

(*c*) Shooting of game-birds between the 1st of April and 31st August (both days inclusive) in each year.

(*d*) Driving of game in the snow.

The forests of the School Circle are closed to the hunting and shooting of the undermentioned animals at the seasons named.

Class of animals.		From	To
Males	Jerau or sambur, spotted deer, hogdeer with horns in velvet or with small horns	1st May.	1st October.
		Throughout the year.	
Females	Tahr and all deer and antelope except gural and serau.	Ditto.	

All the fire-protected portions of the Deoban range, except such outlying patches as Kua, Singóri, Bándla and Kota, but including Kurwa, are closed against hunting and shooting from the 15th of October to the 15th of July, except with the written permission of the officer in charge of the Jaunsár Division. Special permission is, however, given to all officers of the regiment stationed at Chakráta to shoot in the closed reserves, and the Colonel commanding the regiment can give any soldier written permission to shoot; but the dates of all permits, with name of holder, is kept in a register in the orderly-room, so that in case of damage by fire, or otherwise, the offender may be traced.

As a check on the destruction of birds for the sake of their plumage, a fine of Rs. 5 will be inflicted for each skin brought into the cantonments of Chakráta in the breeding season, unless the owner proves them to have been shot at some other time. A list of birds to which this rule applies has been drawn up by the cantonment committee.

The Cantonment Blocks.

101. *The two forest blocks.*—Soon after the cantonment boundaries were defined the whole area was protected from fire, and in 1879 two blocks of forest aggregating 378 acres and called Lurli and Sutoli were handed over to the Forest Department in accordance with His Excellency the Commander-in-Chief's No. 122613 of 7th April, 1877, to the Government of India, Military Works. They were protected from grazing and all cultivation prohibited, but grass-cutting was allowed.

At a meeting of a cantonment committee assembled at the Forest Office, Deoban, on the 12th of October, 1880, it was unanimously agreed—

1*st.*—That a fixed sum of Rs. 250 be expended annually by the Forest Department on works of reproduction and improvement in the above two blocks as follows :—

	Rs.
Burning fire-lines	50
Repairs to boundary lines and paths	20
Sowing and planting	180
Total ...	250

2*nd.*—The revenue, after deducting the above sum and other expenses, such as felling trees and cutting them up into fuel, to be paid to the cantonment funds, and an annual account of all sums received and expended, to be sent to the cantonment authorities at the end of the financial year.

Provided always that the sum of Rs. 250 to be paid by the cantonment fund is obtainable out of the revenue.

Forest garden.—In 1880, 48 acres were taken up for a forest garden below the dák bungalow and the meeting referred to drew up the following rules :—

(1) That all fuel may be removed by the cantonment authorities acting in concert with the forest officer. The revenue as hitherto to remain with the cantonment authorities and the forest officer to have the power of superintending the cutting and removal of fuel, so that no damage shall be done to the garden. In this respect the fuel contractor is bound by the orders of the forest officer.

(2) It is understood that all works, roads, buildings, &c., may be carried out within the limits of the grant of land by the Forest Department without reference to the cantonment authorities, and that the Forest Department may cut down any trees that are necessary for the carrying out of such works in the garden.

(3) The Forest Department is authorized to make a canal for the supply of water, part of which canal runs outside the grant, and to fell any trees which stand in the way of its construction. The Forest Department has the entire charge of the canal and the roadway along it.

Works of improvement —Since the two blocks have been under the charge of the Forest Department they have been successfully protected from fire, with the exception of one small conflagration. They have been opened out by the construction of inspection-

paths, and 69 acres have been sown or planted up mostly with success, as can be gathered from the notes made by the Forest School students when visiting the plantation this year :—

		Successes, per cent
Lurli	Plantation of 1880, deodár and kail	84
	,, 1881 ,, ,,	74
	,, 1882, deodár	74
	,, 1882, chír and bán	54
	,, 1884, deodár	79
Sootoli	,, 1882, ,,	71
	,, 1882, chír	61

Of deodár alone over 60,000 young plants have been put out.

Considerable progress has been made at the forest garden. A canal has been laid down from an adjacent stream and two masonry tanks built. It is intended for the supply of fruit and vegetables to the troops, and as a means of promoting the culture of good fruit trees amongst the villagers, whilst it is also used for experiments in sowing exotic trees and for raising young trees to distribute in cantonments. Over 100 fruit trees of different kinds—apples, pears, cherries, plums, peaches, apricots, quinces, figs and mulberries—were obtained from Mussoorie and Ramkhet in 1882, 274 more from the latter station in 1885, and this year a further batch of 250, making in all 624 young trees, which almost all promise to do well and will no doubt in time yield large quantities of fruit.

Financial results —The two blocks are too small to be worked regularly apart from the other forests and only a small quantity of firewood has been taken out of them, so that the Forest Department has suffered actual loss in their management The account from the time they were taken over to the end of the financial year 1886-87, or for a period of seven years, stands thus:—

Revenue	Rs	a.	p	*Expenditure*	Rs	a	p
13,680 cubic feet of fuel at various rates ..	1,529	10	5	Maintaining boundaries .	65	15	3
Miscellaneous ..	9	12	0	Making paths	351	7	0
Deficit ...	1,075	14	9	Fire protection ..	144	7	6
				Plantations ...	1 499	11	0
				Cutting and carrying fuel .	553	12	5
Total ..	2,615	5	2	Total .	2,615	5	2

The average yearly outturn has therefore been about 2,000 cubic feet of fuel and the revenue Rs 220, whilst the expenditure has been Rs 370, exclusive of control, but including a sum of Rs. 215 spent on sowing and planting.

CHAPTER VI.

DEMANDS FOR PRODUCE AND LINES OF EXPORT.

102. With the exception of the Kálsi forest, practically the only demands which have to be met from this range are for the supply of Chakráta and the neighbouring khats with forest produce, chiefly, of course, timber and fuel. Judging mainly from the past, these requirements may be estimated as follows :—

Kind of produce	*Commissariat*		Bazár, Brewery and residents of Chakráta	Military Works, Chakráta.	Free grants to surrounding khats	Total
	At fuel sheds	At rifle range				
			Stacked cubic feet			
Oak fuel	40,000	2,500	10,000	..	Indefinite quantity of dry wood	52,500
Fir ,,	80,000		...	..	..	80,000
Inferior fuel			6 000	...	...	6,000
Charcoal .		..	10 000	2,000	.	12,000
			Solid cubic feet			
Deodár timber	..		2,000	10,000	10,000	22 000
,, dry pieces		.			4 650	4,650
Fir timber	..	..	1,000	4,000	11 200	16,200
Kail ,, ..	.				2 320	2,320
Morn ,,	..	.	..	..	3 510	3 510
Bán ,,			..	.	4,440	4 440
Chír ,,	..	.		..	040	040
Lauri ,, .	..	..	...	..	200	200
					Number	Number
Ringals*	.	..		.	1,700	1 700
Loads of jogan kagota	...	..	5,000	...	2,040	2 040 5,000

*Also an indefinite number exported to the plains

The list of rates current in the Deoban range is given in Appendix M, and the following considerations will show why the charges for fuel and timber at Chakráta are rather high.

103. *Carriage of fuel.*—In the case of fuel the unit of measurement is 100 cubic feet stacked. For felling, cutting and stacking the rate is Rs. 2 per 100 cubic feet stacked for oak and Rs. 1-12-3 for fir. There is also 5 per cent. to be paid to contractors, which comes to one anna seven pies per 100 cubic feet. For carriage the rate is Rs. 1-6-0 per 100 cubic feet of stacked oak per mile and Rs. 1-2-0 for fir, the mileage being calculated by the nearest quarter of a mile of road over which the fuel has to be carried, and there is also a 5 per cent commission to be paid on these rates if the contractors have given satisfaction. The carrying contract can be terminated by a three months' notice given by either party in October. The rate was reduced by two annas per 100 cubic feet stacked in 1885.

For stacking in the shed the rate is now four annas per 100 cubic feet stacked; in the open, three annas.

The cost of bringing 100 cubic feet of either kind of fuel from the forest to Chakráta is therefore :—

	Distance of 5 miles.				*Distance of 10 miles.*			
	Oak.			Fir.	Oak.			Fir.
	Rs. a. p.			Rs. a. p.	Rs. a. p.			Rs. a. p.
Cutting in forest ...	2	1	7	1 13 4	2	1	7	1 13 4
Carriage ...	6	14	0	5 10 0	13	12	0	11 4 0
Stacking in shed ...	0	4	0	0 4 0	0	4	0	0 4 0
Total ...	9	3	7	7 11 4	16	1	7	13 5 4

The above only represents the actual cost, and nothing is included for royalty on timber, road-making and repairing, fire-protection, planting and establishment.

104. *Carriage of timber.*—The cost of delivering timber at Chakráta varies with the dimensions of the scantling and the rates for carriage are now as follows :—

Kind of scantling.	Collecting in forest.	Carriage to Chakráta per cubic foot per mile.
		Pies.
Planks	6 pies per cubic foot.	4
Karis 23′ and over		10
„ 18′ × 9″ × 4½″ and 15′ × 8″ × 5″		7
„ 18′ × 4″ × 4″, 16′ × 6″ × 4″ and 9′ × 12″ × 6″		6
„ 6′ × 12″ × 5″		5
„ smaller than above		4

Taking as examples a plank 10′ × 12″ × 1½″ = 1·25 cubic feet and a kari 18′ × 4″ × 4″ = 2 cubic feet, the cost of delivery would be as follows :—

	Distance of 5 miles.				*Distance of 10 miles*			
	Plank.			Kari.	Plank.			Kari.
	Rs. a. p			Rs. a. p.	Rs. a p.			Rs. a. p.
Sawing at 6 pies per superficial foot	0	5	0	0 6 0	0	5	0	0 6 0
Collecting at 6 pies per cubic foot ...	0	0	7½	0 1 0	0	0	7½	0 1 0
Carriage	0	2	1	0 5 0	0	4	2	0 10 0
Proportions of charges for felling and logging ...	0	0	7½	0 1 0	0	0	7½	0 1 0
Total ...	0	8	4	0 13 0	0	10	5	1 2 0

In addition there are other expenses, such as those mentioned in connection with the fuel.

105. *Carriage of fuel from Kálsi to Chakráta.*—It is worth considering whether it might not be remunerative to cart up fuel to Chakráta from Kálsi. The Commissariat and Magistrate's rate to Chakráta and back for a two-bullock cart three stages each way is Rs. 1-8-0 a stage or in all Rs. 9. Messrs. Behári Lal and Son of Saháranpur are willing to cart up fuel to Chakráta and to cart down timber from Chakráta to Dákhpathar for five annas per maund each way, provided that a contract be concluded for eight years and that they always get loads on the return journey from Chakráta. Carriage would be interrupted for the three winter months.

The above rates seem rather high ; one two-bullock cart with good bullocks can carry 10 maunds and can go and return in a week. Supposing there was carriage both ways, the following would be required for the carriage of 12,000 maunds :—

	Rs.
40 bullocks at Rs 60 per pair	1,200
20 carts at Rs. 25 each	500
Harness	300
Capital expenditure ...	2,000
Feed and keep of 40 bullocks at Rs. 3 each per month	1,440
15 cartmen at Rs. 6-8-0 each per month	1,170
Purchase of new bullocks, repairs, &c.	460
Tindal at Rs. 20 per month	240
Interest on capital expenditure at Rs. 5 per cent.	100
Total ...	3,410

The commissariat rations for one draught bullock are seven seers of *bhusa*, 10 seers of dry fodder or 15 seers of green fodder per diem ; and as the ordinary price of *bhusa* is two maunds for the rupee, whereas in harvest time four maunds can be obtained, Rs. 3 per month should suffice for the keep of one bullock.

The above allows 10 spare bullocks and five spare carts, and the cost per maund would be only a little over four and a half annas ; but the estimate is based on the supposition, which is extremely doubtful, that it would be profitable to cart down rai planks or other scantling to Dákhpathar and then carry them on the sleeper rafts to Delhi, each raft of 160 sleepers being capable of carrying 40 maunds.

As this trade is so problematical, it will be best to consider that there will only be carriage up the hill, and in this case the cost would not be less than eight annas a maund. As one maund of dry bákli and gosám fuel contains two and a half stacked cubic feet, the carriage of 100 stacked cubic feet to Chakráta would cost Rs. 20, but the cost of preparation would be a little higher, so that at the present rates for mule carriage it would be cheaper to cart fuel up from Kálsi than to bring it on mules from a greater distance than 10 miles.

The rate for charcoal at Chakráta being four annas a cubic foot or Re. 1 per maund, while the cost of manufacture is one anna and a half per cubic foot or six annas per maund, it would pay to bring charcoal up from this forest.

106. *Carriage of fuel from Kurwa to Chakráta.*—In case the Military works or Brewery do not require all the fuel cut in this block in any one year, it should be brought to Chakráta for the use of the Commissariat, and it should be carted up, not carried by mules, the former plan being the cheaper, and an offer has been received to undertake the carriage for three annas a maund only.

107. *Charcoal.*—The quantity of charcoal required is not well known, as much of this has hitherto been supplied by other agencies, some being made by a contractor

in the cantonment forests and some being brought from private forests near Ambári or even from forests in Sírmúr across the Tons, whilst some also used to be brought up from Kálsi.

About 1,000 cubic feet are required annually for the Military Works workshops at Chakráta, 4,000 cubic feet for the Brewery, and probably between 6,000 and 10,000 cubic feet for the station.

The Secretary of State has suggested the experimental cultivation of dogwood in India in connection with the manufacture of gunpowder. It is possible that some of the Himálayan species of dogwood may be suitable for the purpose, and in this range two species, *Cornus macrophylla* and *capitata*, are pretty common, being found scattered along moist and shady ravines between 5,000 and 8,000 feet, thus chiefly occurring in the zone of the bán oak. Last year some charcoal was made from them by the Divisional Officer and sent to the Kirki factory, from which no report has as yet been received. The charcoal was made, however, in the ordinary way, whereas it would appear that it requires to be specially prepared, *vide* "The Indian Forester" for April, 1888, page 109.

108. *Sales of standing trees.*—Many attempts have been made to create a demand for produce from these forests irrespective of Chakráta, but they have hitherto not met with much success. Standing trees as per rates in Appendix M have long been advertised for sale without any result, and only a few standing box trees have been sold to contractors.

109. *Consignments of box to England.*—Two consignments have been sent departmentally to Messrs. Churchill and Sim of London for sale, with the following results. In 1881, 77 trees from the Jádi block were cut up into 331 logs of lengths varying from three feet to five feet and aggregating 456 cubic feet. These pieces were carried to Chakráta, carted to Saháranpur wrapped up in gunny, sent by rail to Karáchi and thence shipped to London. The charges and receipts were:—

Expenditure

		Rs.	a.	p.
1.	Cutting and carriage to Chakráta	166	10	6
2.	Carriage to Saháranpur at Rs. 1 per maund	390	0	0
3.	Covering with gunny, coolies, marking and storage	143	10	10
4.	Rail charges to Karáchi	743	7	0
5.	Messrs Mackinnon and Mackenzie's charges	88	6	6
6.	Freight to London	405	0	0
	Total ...	1,937	2	10

Receipts

	Tons.	cwt.	qr.	lbs.			£	s.	d
Sale in London ...	12	17	2	7	@	£30 per ton ...	380	6	6
Discount @ 2½ per cent						9 13 2			
Messrs Churchill and Sim's charges						19 10 5			
							29	3	7
							357	2	11

	Rs.	a.	p.
Amount received by Messrs Grindlay and Co.... ... } From Messrs Churchill and Sim ... .. } ...	4,312	14	4
Messrs. Grindlay and Co.'s charges	43	11	4
Net amount credited as revenue	4,269	3	0

Thus there was a clean profit of Rs 5-11-0 per cubic foot. Next year a further consignment of 925 cubic feet cut from 98 trees was sent from the same forest, but this realized only £15 per ton, and the net profit went down to 12 annas per cubic foot only.

110. *Tea boxes*.—It is estimated that about 60,000 boxes are required annually in the Dún for this industry. There are two principal kinds of boxes, and for seven boxes 10 planks each are required, of the following dimensions: —

Cube 20 = inch boxes—
8′ × 10″ × ¼″
8′ × 14″ × ¼″
Commissariat boxes—
6′ 6″ × 10″ × ¼″
6′ 6″ × 7″ × ¼″

The planters require the timber to be as durable as mango and seasoned, so that the sap would not corrode the lead lining, and to be obtainable within a reasonable distance of their gardens.

Chír wood is objected to, but some morinda and rai supplied by Mr Moir has been favourably reported on, especially the former, which is stated to be stronger and lighter than mango, whilst the wood does not corrode the lead and the tea keeps perfectly good. Some of the planters were willing to take clean-cut and undamaged logs of these two firs, 8′ × 8″ × 8″, 8′ × 10″ × 10″, and 8′ × 12″ × 12″, at Dakhpathar at such rates that their boxes would not cost more than Re. 1-4-0 each, including nails.

111. *Cask staves*.—As all beer used by the troops in the Bengal Presidency is now supplied by Indian Breweries, so that so many full casks are no longer brought out from England, it is probable staves for 80,000 hogsheads will be required annually, and it becomes, therefore, important to see whether this demand cannot be met from our Indian forests instead of from those of Austria and Russia, whence staves are sent out of the right size and thickness and are bent by the coopers out here. They cost about Rs 10 per hogshead, the requirements for one hogshead being—

20 staves 3′ 1″ × 5″ × 1½″
10 „ 2′ × 6″ × 1½″

Mr. Mackinnon of Mussoorie has tried bán, but it failed, being brittle and not lasting in contact with liquid. He has also tried inai, but with what result is not known.

Last year I prepared some staves of the moru and karshu oaks and sent them to Mr. Mackinnon for trial. He writes that the only objection to the moru oak staves is their great weight; otherwise they answer capitally for making casks. The karshi staves, on the contrary, he considers as totally unfit for this purpose.

Mr. Springett of Mussoorie writes that the weight of the Indian oaks is one of the most serious obstacles to their employment, as it was found that the average weight of four casks complete with hoops and bungs was 2 maunds 1¼ seers compared with 1 maund 13 seers for English oak. Sál has been found quite unsuitable for casks on account of its shrinking, its weight, and its want of flexibility. For boat-making the best-seasoned red Tarai sál is used In June three casks, each containing 54 gallons, made respectively of English, karshu and moru oaks, weighed as follows:—

	Mds	s
English oak	1	13
Karshu	1	37
Moru	2	3

It is certain, however that the Indian oaks were not so well seasoned as the English; it is probable that the staves were slightly thicker. Mr. Springett prefers karshu to moru.

CHAPTER VII.

Formation of blocks and compartments and valuation survey.

112. *Maps*.—The following maps are now available:—

Jaunsár-Bawar	4 sheets,	scale 2″ = 1 mile.
Deoban working circle	4 „	„ 4″ = „

The latter have been used for showing the division into blocks and compartments, but are not so accurate as the more recent maps of the forest survey, many minor ridges and ravines not being shown at all and others apparently being only sketched in, whilst the heights of very few points are given.

113. *Formation of blocks.*—The following is a list of the blocks as they now stand :—

Name of forest.	Name of block.	Number of compartment.	Area in acres.	Area of forest in acres.	Remarks.
Kálsi (part of) ...	Pánjgáon (part of) ...	6	306		The remainder of Kálsi forest has not been divided into compartments. It contains 2,661 acres, the blocks being :
	Barabagh	4	451		
	Haripúr (including Khádar).	18	1,158		
				1,015	Pánjgáon (part of) ... 506 acres.
Oak forests south of Chakráta.	Kua	1	66		Moila ... 485 „
	Singhori	2	201		Dhaira ... 618 „
	Raura	1	106		Amláwa ... 430 „
	Kota	1	174		Thaina ... 472 „
	Kurwa	2	180		Haripúr (bit of) ... 90 „
	Bándla	1	98		
				775	
Lokandi ...	Inári	5	502		
	Bodiár	7	1,463		
	Moila	9	1,200		
	Missau	7	1,527		
	Chátri	3	586		
	Kunásar	1	173		
	Kopti	4	406		
	Asmari	3	880		
				6,237	
Deoban ...	Maruwa	4	640		
	Thona	3	461		
	Kutniár	2	271		
	Kanjátra	4	643		
	Jádi	9	937		
	Darna	5	726		
	Matkángra	5	686		
	Mohna	8	1,071		
	Duráni	6	881		
				6,316	
Ekra ...	Ekra	6	1,026		
	Kulerod	6	595		
	Amlokri	3	518		
	Danda	3	237		
	Hajawa	8	1,041		
	Dulióna	3	815		
	Pandáwa	3	404		
	Rikta	3	536		
				5,172	
Konain ..	Bajamára	3	426		It is also proposed to lease the following cantonment blocks :—
	Loguna	7	924		
	Konain	8	529		
	Karáli	5	589		
	Siari	4	431		
	Gutugad	6	513		
	Bhujkoti	3	330		
	Pánikanál	4	2,155		
	Karámba	7	891		
				6,788	
	Add part of Kálsi not valued.		...	2,661	
	Total for the range ...		...	29,864	

	No. of compartments.	Acres.
Lurli ...	2	190
Sootoli ...	1	188
Chilméri ...	4	568
Patiadhár ...	5	429
Gobráni ...	2	210
Total ...		1,585

When the forest demarcation was carried out certain portions of most of the khats' old area was reserved as Government forest, and for facility of reference such portions were called by the name of the khat they formerly formed part of. It is obvious, however, that they did not necessarily form convenient forest blocks and gradually the whole area got redivided into blocks of convenient size with good natural boundaries, and in most cases with local names different to the khat names. Advantage was taken in 1877 of the publication of the maps of the Deoban working circle to record the new sub-divisions and to show all the blocks on the maps. It is these blocks which are shown in the table given above.

114. *Formation of compartments.*—In his Preliminary Working Plan for these forests Sir D. Brandis makes the following remarks regarding the formation of compartments:—

"Compartments are intended as much as possible to comprise slopes of the same or nearly the same aspect, and forests of a similar if not uniform character requiring the same or nearly the same treatment. Thus a slope with a northerly aspect would be formed into one compartment if the forests were of nearly the same character throughout. But if one portion, for instance, mainly consisted of mature trees and the other of trees of the younger classes, then they would be divided into two or more compartments by natural or artificial lines. Again, if the upper part of the slope

consisted of oak mixed forest and the lower part of coniferous trees, then the upper portion would, if of sufficient extent, form one compartment, while the lower part of the slope would, according to circumstances, form one or several distinct compartments ; but areas of small extent in which the forest has a character different from the rest would not be formed into separate compartments.

The varied nature of the Deoban forest will, in many cases, make it impossible to form compartments uniform in character as regards present forest growth ; in such cases, therefore, their boundaries will be determined by the configuration of the ground and by convenient boundary lines, such as roads, ravines, ridges and the like. Hence it will be evident that in working these forests we must deal not so much with compartments as with portions and sub-divisions of compartments, or sub-compartments as we may call them."

These remarks have been remembered in the formation of the present compartments, but in many cases where the slopes are short, forests with different aspects have had to be included in one compartment to avoid the evil of too minute a subdivision, and natural features or roads have invariably been used as boundaries, undefined artificial boundaries being in no instance employed, except in one or two compartments at Kálsi, as most of the blocks are as yet not fully opened out by paths, and when they come to be worked, paths can be made in such a way as to separate two marked types of forest, so that, when this plan comes to be revised, the compartments can be reformed accordingly : but to do this at once for the whole of the forests would be impracticable.

The present compartments vary in extent usually between 60 and 250 acres, and are all shown on the accompanying maps, whilst the areas under different types of forest in each of them are given in Appendix D.

115. *Former valuation surveys.*—In 1865 some valuation surveys were made in this forest by the Inspector-General, *vide* his Basháhr report of that year. In 1877-79, the Mohna, Kanjatra, Thona, Kópti, Asmári and Kutniár blocks were divided into compartments by Mr. Dansey and a detailed description of each compartment was written. An enumeration survey of Mohna was also completed, but no records can now be found of this work. It is believed, however, that the division was considered much too minute, some of the compartments being only 10 acres in extent.

In 1879-80 a valuation survey of the Hajáwa block was made by Mr. Murray, as recorded in the annual report for that year.

116. *Mode of conducting the late valuation survey.*—The figures given in Appendix A are the results of the enumeration survey just completed.

All trees throughout the forest were counted down to three inches in diameter, there being five diameter classes, *viz.*:—

		Diameter.
I class	... ...	Over 24"
II „	... ...	18"—24"
III „	... ...	12"—18"
IV „	... ...	6"—12"
V „	... ...	3"—6"

Sound and unsound trees of the first three classes have been enumerated separately, whilst all dry, erect or fallen trees of the 1st class have also been counted.

The species which have been counted are :—

Deodár.	Rán.
Kail.	Pápri (box).
Chír.	Ayár.
Rai.	Buráns.
Morinda.	Bákli.
Louri.	Sál.
Karshu.	Sain.
Moru.	Haldu.

All other species have been included under the denomination kukát, and in the Kálsi forest a separation has been made into large kukát and small kukát, the latter including all large shrubs and small trees which are never capable of reaching large enough dimensions for timber purposes, such as *Flacourtia, Kydia, Murraya, Wood*

fordia, Sponia, Mallotus, &c., whilst amongst the former are *Albizzias, Terminalia belerica, Stephegyne, Buchanania,* and *Ægle Marmelos.*

CHAPTER VIII.

THE YIELD OF THE FORESTS.

117. Perhaps the most important question in connection with these forests is the determination of their annual possible yield, as until this has been done with a fair degree of accuracy it is impossible to fix the area necessary for the permanent supply of Chakráta with fuel and timber. This problem is rendered very complicated by the extreme irregularity of the forests and the varying rates of growth of the numerous component species, and also of the same species at different aspects and altitude. This yield is not, therefore, determinable until further observations have been made, but the demands for produce are limited and much less than even the present capabilities of the forests included in the range.

In the Preliminary Working Plan previously referred to it is clearly shown that the only satisfactory unit by which this yield can be expressed is the cubic foot of solid wood.

118. *Rate of growth.*—The information which has been collected up to date will be found in Appendix P. It may be summarized thus :—

Name of block.	Number of stumps counted.	Average number of rings.											
		0" to 2".	2" to 4".	4" to 6".	6" to 8".	8" to 10".	10" to 12".	12" to 14".	14" to 16".	16" to 18".	18" to 20".	20" to 22".	0" to 12".
						Deodár (including suppressed trees).							
Bodiár	30	10·4	11·1	12·6	13·0	12·0	10·7	10·0	...	...	...	...	70·3
Missan	30	13·4	10·3	11·0	11·9	14·2	12·7	14·4	15·9	15·0	7·?	11·5	73·5
Kanáser	3	17·0	19·3	9·3	11·0	13·3	19·7	18·0	14·0	14·3	15·0	...	89·0
Average for three blocks ...		13·7	13·6	11·0	12·0	13·2	14·4	14·1	14·9	14·6	11·?	11·5	77·0
						Deodár (excluding suppressed trees).							
Bodiár	30	10·8	11·1	12·6	13·0	12·0	10·7	10·0	...	...	...	...	70·2
Missan	30	13·4	10·3	11·0	11·9	14·2	12·7	14·4	15·9	15·0	7·?	11·5	73·5
Kanasar	2	12·5	8·5	10·0	11·5	13·5	25·0	24·5	14·0	16·0	15·0	...	81·0
Average for three blocks ...		12·2	10·0	11·2	12·1	13·2	16·1	13·3	15·0	15·5	11·?	11·5	74·8
						Kail (including suppressed trees).							
Kanjátra	45	15·0	14·8	15·8	18·0	21·3	20 3	19·8	15·6	17·8	...	...	106·1
Hajawa	28	18·2	15·4	15·4	18·6	21·7	22 6	29·7	29·2	21·2	28·5	...	111·9
Thona	62	15·9	19·1	22·3	24·3	20·8	20·9	27·7	30·4	34·0	...	...	123·3
Mohna	58	19·5	17·6	16·4	16·9	17·3	15·5	16·8	15·8	...	..	...	103·2
Kópti	39	11·5	11·3	13·6	17 1	18·8	21·5	25 3	26 5	19·1	16·3	19·2	93·8
Kanáser	1	12·0	8·0	7·0	9·0	10·0	15·0	21·0	18·0	...	...	...	61·0
Average for six blocks ...		15·3	14·4	15·1	17·5	18·3	19·3	23·3	22·6	23·0	22·4	19·2	99·9
						Kail (excluding suppressed trees).							
Kanjátra	40	15·1	14·1	14·2	18·5	19 8	19·9	20 0	15·6	17·8	...	...	101·6
Hajawa	21	17 1	14·5	13·8	16·0	18·9	19·4	26·1	25·0	...	...	...	99·7
Thona	36	11 5	13·5	16·2	21·6	20·5	20·0	27·7	30·4	34·0	...	...	103·3
Mohna	37	17·1	14·8	13·3	13·9	13·6	13·7	14·9	13·4	...	...	...	86·4
Kópti	34	11·2	10 5	11·6	14·9	17·7	20·7	25 1	26·5	19·1	16·3	19·2	80·6
Kanáser	1	12·0	8·0	7·0	9·0	10·0	15·0	21·0	18·0	...	...	...	61·0
Average for six blocks ...		14·0	12·5	12·7	15·6	16·7	18·1	22·5	21·5	23 6	10·3	19·2	88·8
						Morinda (including suppressed trees).							
Kanjátra	10	17·7	18·1	16·4	18·0	20·1	30·7	30·0	...	...	...	...	121
Hajawa	15	23·9	19·0	20·2	21·1	24·8	21·4	21·5	20·5	18 0	31·0	...	131
Mohna	111	16·5	14·9	13·8	16·0	15·9	15·5	15 5	14·6	12·7	...	...	92·7
Kópti	1	33·0	20·0	27·0	28·0	23·0	33·0	23 0	...	...	...	...	178·0
Average for four blocks ...		22·9	20·4	19·4	20·8	20·9	25·1	25·0	15·7	14·8	31·0	...	120·4
						Morinda (excluding suppressed trees)							
Kanjátra	7	14·1	14·9	13·6	17·3	20·7	30·5	30·0	...	...	...	...	111·1
Hajáwa	7	20·4	16·4	16 1	14·8	15·7	18·8	23·6	21·6	22·0	31·0	...	102·2
Mohna	92	15·3	13·4	12·7	13·8	14·4	14·4	15·3	14·6	12·7	.	...	84·0
Average for three blocks...		16·6	14·9	14·1	15·3	16·9	21·2	20·0	18·1	17·3	31·0	...	99·1
						Karshu (including suppressed trees).							
Kanjátra	5	23·8	38·2	43·0	35·2	35·2	..	...	...	...	...	...	...
Mohna	10	28·7	26·7	29·2	31·0	26·0	32·0	...	...	...	...	...	...
Average for two blocks ...		26·2	32 4	36·1	33·1	30·6	32·0	...		...	...	...	...
						Karshu (excluding suppressed trees).							
Kanjátra and Mohna ...	8	25·9	22·8	25·7	28·5	23·8	32·0	...	...	...	...	...	...
						Box.							
Jádi	2	18·5	27	34	40	40	...	...	...	...	...	...	...

The above represents the actual rings counted, and nothing is added for the seedling stage. Allowing 15 years for this stage (25 years in the case of box), neglecting the thickness of the bark in the case of the youngest class, taking it as ·25 of an inch in the two next and as ·50 in the higher classes, we find that, excluding suppressed trees, the average number of years that the above species remain in one diameter class is as follows :—

	V Class 0″—6″.	IV Class 6″—12″.	III Class 12″—18″.	II Class 18″—24″.	Age on entering I Class, over 24″.
Deodár	32	15	18	20	85
Rai	35	17	21	24	100
Morinda	39	20	23	27	109
Karshu	52	34	35	44	165
Box	56	44	62	...	

The rings of the oaks being indistinct and almost impossible to count with accuracy, sample plots have been formed for measuring the annual increase in girth of these trees The first to be measured was the karshu in an one-acre plot in Jádi 9, the suppressed and injured trees being removed. The results for a term of five years from June 1883 to May 1888 are as follows :—

Diameter classes.	Annual increase in diameter.	Years necessary to pass into next class.
V 3″—6″	·16	31
IV 6″—12″	·18	33
III 12″—18″	18.	33

The time required for a seedling to reach a diameter of three inches may be put down at about 25 years, so that it takes 112 years to reach the second class, and probably nearly 160 to become two feet in diameter, a conclusion which very nearly tallies with the ring-countings made by Sir D. Brandis.

Sample plots for measuring moru and bán have just been formed, but the former which is in Matkángra contains only young trees in a nursery where the growth would probably be much more rapid than under normal conditions, and where, moreover, all the trees are of the same age, whilst the latter is at Kurwa in a part which has been coppiced and where only the old trees left as standards are measured; neither of these two plots seem, therefore, to be suitable for our purpose, which is to determine the rate of growth of oaks of different diameter classes in a fairly typical forest.

Reducing factor.

119. The measures to determine this factor were taken in accordance with the directions of the preliminary working plan, which were as follows :—

The contents of a tree, including its branches, may be regarded as a portion of a cylinder the base of which is the base of the tree and the length is its height. The co-efficient or fraction, which, multiplied with the cylinder, gives the cubic contents of the tree, we have agreed to call the reducing factor. It is evident that the value of this reducing factor varies with the shape of the tree and its branches, and that certain classes should be established for each of which a reducing factor must be determined. This is a large task, which requires long and systematic research, and entails the analysis of numerous sample trees. In the present case we will limit our researches to the determination of a *mean reducing* factor for each kind of tree with a girth exceeding 4 feet 6 inches. Such a mean factor being determined, all that is required for determining the cubic contents of the trees in one compartment is to multiply the aggregate sectional area of each height of class with the average height of the trees in that class, and to sum up the results. It is obviously immaterial at what height from the ground the sectional area of the base is taken, provided it is taken always at the same height. For the Jaunsár Forests I would suggest 5 feet.

The value of the mean reducing factor must be ascertained by the analysis of a number of sample trees of different heights and girths above 4 feet 6 inches. The procedure will be as follows :—

1*st*,—Age and rate of growth to be ascertained by counting the rings on a mean radius of the stumps from 2 to 2 inches.

2*nd*,—Girth at 5 feet from the ground, and total height to be measured.

3*rd*,—Cubic contents to be determined by actual measurement in the following manner :—The stem to be logged, all symmetrical pieces to be measured, and their contents to be calculated as cylinders by their mean diameter, the cubic contents of all irregular pieces and small wood, as far as saleable, to be determined by stacking.

From the measurements which have since been made, full particulars of which are given in appendix Q, the following mean reducing factors have been deduced :—

Species.	Diameter.	No. of trees measured.	Average diameter.	Average height.	Average cubic contents of stem	Average cubic contents of branch wood.	Total average cubic contents.	Average cubic contents of ideal cylinder.	Reducing factor
			inches.	feet.	c ft.	c ft.	c.ft.	c.ft.	
Spruce ...	18″—24″	18	21	95	129·93	16·43	146 36	242 01	·60
Ditto ...	24″ and over,	49	30	115	301 33	31 12	332·45	624·36	·53
Silver fir ...	18″—24″	18	21	90	124 02	17 40	141·42	235 81	·60
Ditto .	24″ and over,	18	28	105	242 68	21·72	264 40	491 33	·54

From the figures in the appendix it may be deduced that the reducing factor for firs 4′ 6″ in girth and above becomes less as the trees increase in size.

Relation between stacked fuel and its solid contents.

120. In 1879 an experiment to determine this relation was carried out at Chakráta by Mr. Smythies, but owing to difficulty about the supply of water, it came to a premature conclusion, and for the same reason it has not been continued since.

A tank 3½ feet deep and about 6½ feet square was built of solid masonry, and an escape hole for the water at the bottom was constructed out of a large bamboo. The inside of the tank was finished with smooth plaster. Two casks furnished with taps were placed on a stand at one side of the tank, and water was supplied to the casks by means of a small canal, being the waste water of the Chakráta water-works. Each cask was measured to hold 54 gallons, and each was supplied with a rod graduated to every 10 gallons (one of them to every 5 gallons). An imperial gallon measure was issued to gauge the casks, and the graduation of the rods was twice tested carefully.

The empty tank was first of all measured by means of the casks, and it was found that up to a certain mark, which was indicated on all the four walls when the water was level, the tank held 986 gallons.

The fuel operated on was fir stacked in lines of 300 cubic feet each ; it was placed, a certain amount at a time, in three parallel lines, and was kept down by fixed cross-beams. The three moveable scantlings were partially immersed in the water every time, but this was allowed for when the tank was measured, *i.e.*, they floated at the top of the water underneath the cross-beam in the same respective positions they held afterwards. The fuel being carefully stacked in the tank, water was admitted, a cask at a time, and when the water came up to the mark on the walls, the amount was recorded ; it generally happening that eight full casks and a few gallons were required each time.

The result of the experiment on 1,200 cubic feet stacked was found to be that *in stacked fuel about two-thirds the amount is solid wood, i.e.*, 100 cubic feet of solid wood=150 stacked cubic feet of fuel.

Neither the casks nor the tank leaked, and the chief source of error laid in the absorption of water by the fuel, which was two and-a-half years old and exceedingly dry.

It was intended to repeat the experiment with green fuel, trying oak and fir separately; but lack of water has hitherto prevented this being done.

121. *Weight of fuel.*—It was formerly supposed that in *green* fuel 240 cubic feet of stacked oak or 320 cubic feet of stacked fir weighed 100 maunds, but from weighments which have been made the figure for fir should be reduced to 300. It has been found that fir fuel becomes practically dry after a period of one year in the open and of two years under cover. In the open the fuel is found to have partly decayed and to have absorbed water at the end of the second year. Under cover the loss in weight in two years is found to be 22 to 23 per cent., the weight being 3 cubic feet to the maund for green, and about 3·6 cubic feet for dry fir fuel. The cubic contents of the restacked fuel are also diminished by about 5 per cent. The equivalent in stacked cubic feet to 100 maunds may therefore be stated thus—

	Green fuel. Cubic feet.	*Dry fuel.* Cubic feet.
Oak	240	280
Fir	300	360

On the 9th of February, 1887, the following green fuel was weighed at Kálsí, and it was reweighed on the 3rd of June, 1887.

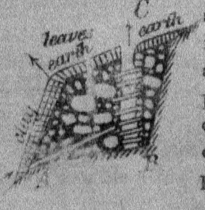
Species.	*Weighed on 9th February*, 1887.			*Reweighed on 3rd June*, 1887.		
	Stacked cubic feet.	Weight in maunds.	Number of stacked cubic feet per 100 maunds.	Weight in maunds.	Number of stacked cubic feet per 100 maunds.	Loss of weight per cent.
Bákli	200	112	178	87	230	22·
Gosám	200	102	196	76	263	25·
Kokat	100	42	238	29½	339	30·

122. *Outturn of charcoal.*—Charcoal has now been made in these forests for many years past, but the only data available as to the outturn of charcoal to the quantity of wood used is to be found in a report by Mr. Heinig in 1880 on charcoal-burning. The following trees, four of which were dry, were used :—

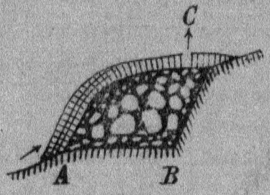
Bán	7
Moru	4
Buráns	5
Ayár	3
Total ...	19

Of these, five were made over to a native contractor. The remainder were cut into billets of various sizes and weighed, the total weight amounting to 1,006 maunds. The billets were not cut to an uniform size, as the cost was prohibitive. Ten kilns, many of them differently constructed, were made; one of them by a native contractor to compare the European and native methods. The best design proved to be the one shown in the diagram. The inclination of the hillside was about 30 degrees, and the kilns were cut 9′ × 12′ × 4½′ with a bed slightly inclined upwards.

The billets were placed horizontally, as they were then less liable to scale or break off when the kiln was being unloaded. The inclined and vertical flues were first built up, the latter by placing two billets 2½ feet long across each other alternately, as shown in the diagram, which also shows the mode of placing the large and small billets. All interstices were carefully packed with smaller pieces of wood and dry stalks of the sirkanda grass. The base of the central flue was also packed as above, and mixed with pieces of charcoal taken



from the site of an old kiln close by. The kiln was then covered with leaves three inches thick and earth six inches thick. On the lower side a breast-wall of stones in earth was built, and part of the earth-covering was of beaten clay. The pit was fired simultaneously at A and B, live charcoal being dropped down to B from C, and the fire was allowed to burn for 40 minutes when the orifice C was closed. Two new openings were then made in the side of the kiln, and after two days the aperture at A was closed, and a new opening made in the face of the kiln. After five days the three new openings were closed, and the kiln allowed to burn itself out. A native kiln is shown in the next diagram. The kiln is built up quickly, the smaller branches, dry grass and leaves strewn on its bed, and the large tree trunks cut into pieces about five to seven feet long. No flue is constructed, but the fire is lit at A, and the orifice C is kept open to induce a draught, until the collapse of the kiln.



The total yield of the 14 trees was 200½ maunds, or about one maund of charcoal for every five maunds of wood. The bán and moru charcoal was found to be good and heavy, whereas that of the other two species was very light, and that made by the native contractor was inferior. The cost of making per maund was very high, *viz.*, 15 annas per maund, whilst the native contractor received only 8 annas per maund. It is stated that the latter can do the work cheaper, owing to his reckless indifference to waste, and by his low rates of hire.

123. *Height of trees.*—The determination of the average height of the more important species in different compartments is absolutely necessary for the accurate determination of the annual yield, as without it the reducing factors cannot be applied. This height varies for the same species at different altitudes, different aspects, and according to the nature of the soil. The sizes which the trees are capable of attaining is referred to in paragraph 63. The average height of trees of different diameter classes obtained from the measurements given in appendix R is as follows :—

For species of the upper forests.

Species.	Number of trees measured.	12″—18.″	18″—24.″	24″—30.″	30″—36.″	36″—42.″	Over 42.″
Deodár	81	...	...	99	112	117	129
Kail	28	...	103	109	107	121	130
Rai	127	...	81	105	113	130	135
Morinda	31	...	93	100	107	122	138
Moru	61	...	54	71	86	85	104
Bán	80	36	62	69	72	79	78
Karshu	54	...	60	70	64	71	71

CHAPTER IX.

The Working Plan.

124. It is proposed to keep in the Deoban range only such forests as can be utilized for the supply of timber, fuel, and charcoal, for Chakráta, but inclusive of Kálsi, the whole being under the charge of a ranger with headquarters at Deoban. This will necessitate the re-arrangement of the Konain beats, the forests on the Riknár gád being added to the Báwar range, and the protective charges will then be as follows, beats Nos. 1 to 9 being directly under the ranger.

Name of forest.	No. of beat.	Name of blocks.	Area of beat.	Head-quarters of beat.
			Acres.	
KÁLSI ...	1 & 2	Thaina, Panjgáon, Barabagh, Amláwa, Haripur Bias, Moila and Dhaira	4,576	Kálsi.
OAK forests south of Chakráta.	3	Singori, Kua, Raura, Kurwa, Bándla, and Kota...	775	Kurwa.
CANTONMENTS ...	4 & 5	Lurli, Sootoli, Chilmeri, Patiadhár, Gobráni, Forest garden and Matkángra.	2,271	Chakráta.
DEOBAN ...	6	Mohna, Jádi, and Darna	2,734	Deoban and Jádi in winter.
	7	Thona, Kutniár, Kanjátra, Marauwa 3 to 5 and Durání.	2,621	Deoban.
KONAIN ...	8	Bajamára, Leguna, Konain, Siári, Gutugád, Bhujkoti, Pánikanál, and Karali	4,433	Konain.
	9	Ekra, Kulered, Amlokri, Dánda, Hajawa, Duliána, Pandawa, Rikta and Karámba.	7,327	Konain and Baniána.
LOKANDI, (Forester in charge with head-quarters at Bodiár.	10	Bodiár and Inári	1,965	Bodiár (Masshak in winter).
	11	Asmári, Missau, 1 to 6 and Moila	2,947	Masshak.
	12	Chatri, Kopti, Kanásar, Missáu 7 and Marauwa 1 and 2	1,600	Kanásar.
CHAKRÁTA depôt (Forester in Charge.	13	Chakráta depot	...	Chakráta.
	14	Basár depôt	...	
		Total area of range ...	31,249	

The area of beat number 3 is small, but the blocks are all isolated from each other and at great distances apart. Two forest guards have been provided for the Cantonment Forests on the supposition that the proposals which have recently gone up for leasing them will be agreed to, and a forest guard has been provided for the fuel depôt in the bazar which it is intended to form.

It will be necessary to have a forester in charge of the Lokandi forests, who should be stationed at Bodiár and execute the planting operations there, as well as look after the improvement fellings in Missau, Kopti, and Kanásar, and carry out other necessary works.

125. Eleven working circles have been formed, the divisions being based chiefly on the demands of the market, and each circle being devoted to a special purpose, as shown in the following table :—

No. of working circle.	Name of working circle.	Name of blocks.	Area in acres.	Purposes for which formed.
I.	KARÁMBA ...	Karamba 2—5 Rikta and Konain ...	3,040	Chakráta deodár supply.
II.	LOKANDI ...	Inári, Bodiár, Molla, Missau, Chátri, Kanasar, Asmari, Kopti, and Marauwa 1 and 2.	6,512	Export of deodár to the plains.
III.	DEOBAN ...	Mohna, Jádi, Darna, Thona, Kutniár, Kanjátra, Marauwa, 3—5. Durani, Bajamára, Leguna, Ekra Kulered, Amlokri, Danda, Hajáwa 1—7.	10,122	Commissariat fuel supply.
IV.	KARSHU coppice,	Hajawa 8 and part of Jadi 9 ...	...	Ditto.
V.	RAURA ...	Raura	100	Fuel for the Rifle Range.
VI.	BÁN coppice ...	Kurwa and Bandla ...	228	Fuel for Military Works and Brewery.
VII.	BHUJKOTI ...	Bhujkoti, Gutugad, Siári, Karáli, Pánikanal and Duliána.	3,369	Timber for free grantees and spruce timber for Chakráta.
VIII.	PANDÁWA ...	Pandáwa and Karámba 1 ...	584	Fuel for Military, Works.
IX.	MATKANGRA ...	Matkángra	686	Ditto.
X.	CANTONMENT ...	Lurli, Sootoli, Chilmeri, Patiadhár, and Gobráni.	1,585	Fuel for bazár and residents of Chakrata.
XI.	KÁLSI ...	Kalsi blocks	4,576	Local requirements and for export, as also for charcoal for Chakráta.
	Not included in any working circle.	Kua, Singori and Kota	441	

It must be distinctly understood that the arrangement is only provisional, and is of course liable to be changed considerably when this plan comes to be revised.

The plan of work in these different working circles will now be discussed.

I.—THE KARAMBA CIRCLE.

126. The main object of this circle is to supply Chakráta with deodár timber, but it will also have to furnish annually 12 green deodár trees as a free grant to the villagers of khats Tuplár, Rangau, Uperli-Athgaon, and Bislár.

The result of the enumeration survey of the deodár is as follows :—

Name of block.	V Class 9"—6"	IV Class 6"—12"	III Class 12"—18"		II Class 18"—24"		I CLASS OVER 24"			Dry.	
			Green.				Sound.				
			Sound.	Unsound.	Sound.	Unsound.	Fit for timber.	Unfit for timber.	Unsound.	Knot	Fallen.
* Karámba ...	21,423	10,046	2,128	32	1,815	48	1,500	3,398	146	16	7
Rikta	4,867	1,996	633	7	307	19	100	606	20	3	3
Konain ...	22,558	9,400	2,544	47	1,664	42	200	2,474	116	25	6
Total ...	48,848	21,442	5,305	86	3,846	109	1,800	6,478	282	44	16

* Unsound and dry I Class trees were only counted in compartment 1, Karámba

127. *Selection fellings of deodár.*—The requirements of Chakráta are uncertain, most of the timber being used by the Military Works Department, who usually indent annually for the amount needed, whilst a smaller quantity is sold to residents. If it be determined to permanently quarter a second regiment there, and to build new barracks for them, the forests now set aside will not suffice for the purpose, but in the ordinary course of events about 80 green trees per annum, together with the dry trees which are numerous throughout the Karámba block, but by an omission were not counted, should suffice to supply the station, so that, including free grants, about 92 green trees will have to be felled yearly. As it is estimated that there are now 1,500 first class green trees in the circle, there is just enough timber for felling to last for the next twenty years, and the compartments should be worked in the following order :—

Karámba	...	...	...	2
„	...	...	...	3
„	...	...	...	4
„	...	...	...	4
Konain	...	...	...	5
„	...	...	...	7
„	...	...	...	6
„	...	...	...	8
„	...	...	...	1
„	...	...	...	2
„	...	...	...	3
Rikta	...	...	...	3
„	...	...	...	2
„	..	...	...	1

128. *Free grant trees.*—The 12 free grant trees should be given away yearly from compartments 5 and 6, and the same free grantees might also be allowed to saw up dry pieces in these two compartments, but dry timber elsewhere should be kept exclusively for departmental works, and the free grants of green trees should be strictly limited to the number mentioned, and no such trees should be sold to villagers or to other purchasers. This is a convenient arrangement both for the villagers and for

this department, compartments 5 and 6 being the nearest to the villages and the most remote from Chakráta. When every fellable green deodár has been removed from compartments 5 and 6, free grant trees may be given from compartment 4, but not before.

129. *Rai timber.*—There are a very large number of fine rai in Karámba, but it will be better to transfer the sawing up of rai to the Siári block, which is closer to the station.

130 *Planting operations.*—After Bodiár has been completely planted up the following areas in Konain may be taken in hand, but it is hoped that before this time arrives some portions at least will be covered with natural reproduction :—

		Approximate area in acres.
Compartment 7	... ...	7
Ditto 1	... ...	12
Ditto 2	... ...	16
Ditto 3	... ...	20
Total	... ...	55

The species to be used must be deodár and kail, and the twelve acres to be planted up in compartment 1, being close to the village of Konain, will have to be fenced, whilst cattle-grazing must be stopped in compartment 2, and cattle and sheep-grazing in compartment 3. Natural reproduction must be trusted to fill up the small blanks in the other parts of the block.

There are considerable areas suitable for deodár-planting in the Karámba and Ríkta blocks, but in view of the various other planting operations going on in the other ranges of the division, it will be sufficient in the Deoban range to plant up all blanks in the first class forests of Bodiár and Konain during the period of the present plan.

131. *Thinnings.*—In the treatment of this working circle, the great object should be the production of deodár, and as this species has some formidable rivals to contend against, notably the firs in the Karámba block and kail in parts of Konain, it must be aided in its struggle by thinnings. In the Karámba and Ríkta blocks this aid will consist of the first three operations mentioned in paragraph 80 of the Mundáli plan, taking care to give the young deodár saplings and poles plenty of light by entirely uncovering the leaf-canopy overhead, especially in Karámba, where there is usually a dense fir forest mixed with deodár. The trees will have to be killed by girdling, since the distance of Karámba prohibits the wood being carried to Chakráta for fuel, whilst in Ríkta, although the distance is somewhat less, there are no fuel roads, and it would scarcely pay to make them for the small quantity of fuel available, but good first class rai fit for timber should, as a rule, be spared. In Konain, on the contrary, it will be advisable to make improvement fellings, on the same principle as the girdling operations above in compartments 4, 5 and 7, the fuel being carried to Chakráta. The fellings should begin in Konain 4 in 1890 and continue until the three compartments have been worked over. It is true that the distance is 11¼ miles or 1¾ miles beyond the usual limit of fuel operations, but it will be better to incur the extra cost of carriage than to allow so many dry trees to remain standing in the first class forest, thus increasing the risks from fires and insects. Young kail, &c., which are too small to be cut up into fuel, will simply be girdled or cut down, and no fuel will be exported from compartments 3, 6 and 8, which are more remote.

As lime is often burnt for departmental use in compartment 7 Konain, no oaks should be girdled or cut for fuel for Chakráta in this block, but they may be felled from time to time as required for the supply of fuel to the kilns.

132. *Export roads.*—About two miles of timber export paths will have to be made in Karámba, two miles in Ríkta, and a-mile-and-a-half of fuel paths in Konain.

II.—THE LOKANDI CIRCLE.

133. This is intended eventually to form a portion only of a large working circle, which will also include Mundáli and other deodár forests in Jaunsár, from which timber can be exported to the plains : *vide* Introduction to the Working Plan for the Tehri leased forests. For the next 20 years, however, no timber will be available for export from these forests, and they have therefore been formed into the present provisional working circle. Omitting the number of trees other than deodár in the Inári and Moila blocks, because their distance from Chakráta prohibits fuel carriage from them, the contents of the working circle are as follows :—

Name of species.	V Class 3"—6".	IV Class 6"—12".	III Class. 12"—18".		II Class. 18"—24".		I Class. over 24".			
							Green.		*Dry.*	
			Sound.	Unsound.	Sound	Unsound.	Sound.	Unsound.	Erect.	Fallen.
Deodár	127,910	71,141	19,497	344	9,540	362	11,495	706	137	44
Kail	35,573	11,428	4,295	163	2,273	196	2,455	464	58	16
Chír	1,108	2,250	2,158	26	1,557	21	1,889	32	9	1
Sirs	58,464	34,510	14,513	1,062	10,202	1,108	12,188	2,805	226	57
Oaks	24,802	27,742	10,472	2,806	4,081	1,551	4,269	2,150	36	19
Cypress	1,263	1,117	550	19	326	50	389	38	9	3
Kokat (including buráns and ayár.	10,463	6,265	840	463	241	159	153	109	1	...

Of the sound green first class deodár, it is estimated that 10,575 are unfit and only 920 fit for timber, *i. e.*, possess pretty long clean boles free from knots ; of these 160 are in the first class forests of Bodiár and Kanásar, and can be used for departmental works. The fellings of first class deodár for timber must, therefore, of necessity be limited for the next 20 years, and should be confined annually to the following amount to be granted to the khats noted in appendix I.

	Trees.
Moila, Missau and Asmári	35
Chatri, Kopti and Marauwa	3
Total ...	38

Together with an additional tree for each khat if required, whilst branchy trees unfit for timber can be cut out in the improvement fellings.

The other free grants which will have to be met annually are :—

Kail	12
Cypress	2
Firs	24
Moru	30
Bán	60

These trees should be given from the blocks mentioned in appendix I.

136. *Thinnings amongst young deodár.*—In compartments 1, 2, 4, and 5 of Bodiár, compartment 4 of Kópti, and in Kanásar there are some dense patches of almost pure deodár saplings and poles which it would be beneficial to thin out, great care being taken to preserve the more healthy and vigorous stems, and not to isolate them, but to maintain the leaf-canopy sufficiently close to enable them to be drawn up and to acquire long clean boles. In this operation all suppressed trees which no longer serve any useful purpose may be extracted. The work is not, however, urgent and should only be undertaken when a sale can be found for the produce at Chakráta or to supply indents from the Sappers and Miners, Roorkee, or others.

The main operations to be carried out during the term of this plan must have for their sole object the improvement of the working circle as a deodár-producing area and will be two in number : —

(*a*) Improvement fellings and cleanings.

(*b*) Sowing and planting up blanks.

136 (*a*). *Improvement fellings and cleanings.*—Owing to their distance from Chakráta, no improvement fellings can be made in the Inári and Moila blocks, as the produce could not be utilised and girdling is not very necessary. Elsewhere in the circle fuel can be brought out, as although in some compartments the distance is a little over ten miles, yet it is preferable to incur the extra expense, rather than to allow a large number of dead and girdled trees to remain standing in the forests. Where, however, the distance is over ten miles as in the Bodiár block and in compartments 1 and 2 of Missau, only such trees need be felled as are actually damaging young deodár or are certain to prove injurious to them within the next 20 years; whereas elsewhere the fellings should be conducted on a different system, trees being marked more freely and besides relieving all deodár seedlings, saplings and poles from suppression; all trees helping to contract the crowns of large deodár should be felled, and large gaps should be made in the leaf-canopy near seed-bearing deodár wherever it is reasonable to expect reproduction of that species, the great object being to increase the number of deodár at the expense of the inferior species. In these fellings trees of all sizes should be cut, down to the smallest poles, where such are suppressing or are likely to suppress young deodár; but where there are no deodár, fellings should not be made unless the place is within ten miles of Chakráta; and in this case only trees over well-established advance growth should be cut, save in compartments 1 and 2, Kópti and in Kanásar, which are the only areas closed to grazing.

It will be noticed what a large number of the first class deodár are worthless for timber. In cases where such trees are found growing amongst a full crop of young deodár, and are no longer required for seeding purposes, they should be cut out in the course of the ordinary improvement fellings, but being inferior to fir as fuel not more than 10,000 cubic feet should be cut out in any one year. Any portions of such trees which may be fit for timber should on no account be cut up into fuel, but either used as timber for departmental purposes, or sold or given away as a part of the free grant to the villagers.

The compartments should be worked in the following order :—

Kópti	...	...	...	1	(portion not yet worked.)
Ditto	...	...	...	2	(ditto.)
Ditto	...	...	...	3	(ditto.)
Ditto	...	...	...	4	
Marauwa	..	...	...	1	
..	...	...	..	2	(upper portion containing deodár.)
Kanásar and the adjoining deodár areas in Chátri 3 and Missau 7					
Missau 6, upper portion and adjoining part of Missau 7					
Asmári 3, portion containing deodár			...		„
Do.	ditto	...	...	2	„
Missau	...	...	...	5	„
Do.	...	...	...	4	„
Do.	...	...	...	3	„

Not less than half the annual requirements of the Commissariat in fir fuel should be met from this circle, including 10,000 cubic feet of deodár as well as some kail fuel, but the quantity of oak fuel obtainable will be very small and will not probably exceed 3,000 cubic feet annually.

At the present rate of consumption it may take 20 years to work through the compartments given above, but in case the demands increase or the outturn is less than anticipated, similar fellings will have to be made in Missau 1 and 2, and in the Bodiár block.

Over some areas where there are dense thickets of kail with young deodár underneath, as in the upper portions of Marauwa 1 and 2, in parts of Kópti 4, Kanásar and Missau 4 and 5, cleanings are urgently required, and these should be undertaken in accordance with the scheme given in paragraph 177, as much as possible of the kail being taken away as fuel.

137 (*b*). *Sowing and planting up blanks.*—Throughout most of the working circle in the deodár zone the natural reproduction of deodár is good and may be

relied on to fill up the greater portion of the blanks other than those which are excessively grazed over. In Bodiár, on the contrary, as may be gathered from the description of compartments, this cannot be expected, and it is here that we must at first concentrate our sowing and planting operations as far as deodár is concerned. The details of the work to be done are given in paragraph 175.

In some parts of the circle where grazing is heavy, the deodár seedlings though sometimes numerous are kept down by the sheep and goats. As an experiment, I would suggest taking compartment 3, Asmári, which is heavily grazed, in hand and wire-fencing an area of ten acres either in one or in three or four different places where deodár reproduction is being checked ; and when this has been thoroughly stocked and the young plants are out of danger from grazing animals, to remove the fence to a second area until the whole of the deodár-producing area in compartment 3 is in a proper state : compartment 2 Asmári might then be treated similarly, and then the different compartments in Missau.

138. *Export roads.*—To work the compartments mentioned in paragraph 136, about 20 miles of fuel roads will be required. The most important is the one which will have to be made from the Missau road from a point on the left bank of the Missau nála through the Asmári block passing below the Dadora peak, skirting the large open blank in compartment 3, and ascending the Manjáun nála to the Thona láni. This road will serve not only to tap the Asmári block but will also be used for the carriage of fuel from Missau 4 and 5, as it will bring these compartments about a mile nearer Chakráta.

The lines of export will be *viâ* the Missau road to Kanjátra láni for Kópti 3 and 4, lower portions of Kópti 1 and 2, Maranwa 1 and 2, Kanásar and Missau 6 and 7, *viâ* the new road through Asmári to Thona láni for Asmári 2 and 3 and Missau 4 and 5, and *viâ* Lokandi láni and Deoban for Missau 3.

III.—THE DEOBAN CIRCLE.

139. This may be regarded as the main source for the fuel supply of Chakráta and eventually should suffice together with the Cantonment forests to meet all the requirements of the Commissariat and Bazár on this account.

The actual contents of the working circle are given in the following table, omitting the small number of trees in the areas set aside for grazing.

Name of species.	V Class 3"—6".	IV Class. 6"—12"	*III Class* 12"—18".		*II Class* 18"—24".		I Class over 24".			
							Green.		*Dry.*	
			Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.
			Forest protected from fire and grazing.							
Deodár	16,232	7,038	2,375	80	1,078	53	1,744	90	22	7
Kail	23,641	4,041	1,014	70	480	54	376	48	12	8
Fir	87,248	46,413	21,513	1,549	12,426	1,876	10,571	2,702	178	62
Oaks	52,401	32,095	15,684	3,605	5,773	2,329	2,904	2,310	86	36
Miscellaneous ..	20,526	9,176	1,040	367	320	128	178	108	5	...
			Forests protected from fires only.							
Deodár ...	20,420	8,966	3,207	128	2,144	125	2,940	274	67	22
Kail	20,761	3,577	1,212	75	537	74	687	109	34	18
Fir	94,606	52,169	23,134	1,407	9,979	1,269	8,034	2,506	721	216
Oaks	91,128	61,763	20,861	5,665	5,597	2,450	3,617	2,513	145	80
Box ...	1,720	1,583	122	36	1	3	...	...	...	...
Miscellaneous .	42,203	30,395	5,375	1,040	1,012	551	391	355	34	7
			Forests open to fires.							
Deodár . ..	214	145	37	..	7	.	4	1	1	.
Kail	584	453	264	1	41	2	31	8	6	7
Fir	6,697	4,217	1,640	108	591	186	470	157	32	6
Oaks	21,511	30,052	16,554	3,279	7,140	7,017	5,883	2,398	128	37
Miscellaneous ...	48,284	27,780	8,773	1,525	1,788	561	736	353	21	6
			Total for the working circle.							
Deodár ...	36,866	16,749	5,619	208	3,824	178	4,688	365	90	29
Kail ..	44,986	8,071	2,490	146	1,058	130	1,094	160	52	33
Fir	188,551	102,799	46,287	3,059	22,996	2,783	19,075	5,425	931	284
Oaks	165,040	123,910	52,609	12,549	18,510	6,826	12,354	6,221	309	153
Box	1,720	1,583	122	36	1	3	...	...	...	...
Miscellaneous ..	119,819	77,063	15,177	3,533	3,120	1,240	1,305	1,816	60	13

The areas containing the above species and the nature of the areas not stocked with forest may be summarised as follows from appendix :—

Forest types.	Areas closed to fires and grazing.	Areas closed to fires but open to grazing.	Areas open to both fires and grazing.	Total.
	Acres.	Acres.	Acres.	Acres.
Deodár	5	122	...	127
Kail	85	127	...	212
Fir	1,320	924	57	2,307
Oak	494	1,040	1,153	2,687
Miscellaneous trees	23	124	86	233
Plantations	133	2	...	135
Blanks covered with natural reproduction,	222	208	...	430
Blanks suitable for planting	287	894	482	1,613
Grazing areas	...	...	822	822
Unproductive ground	76	577	677	1,330
Chaks of cultivation	2	163	61	226
Total	2,603	4,181	3,338	10,122
Workable area (deducting chaks, grazing areas and unproductive ground).	2,525	3,407	1,780	7,772

On these three different conditions must mainly depend the system on which the forests should be worked ; thus, in areas closed to fires and grazing, trees can be felled freely, and any method of working suitable to a hilly country can be adopted in the areas closed to fires but open to grazing, trees should only be felled in places where the advance growth is abundant, established, and out of danger from grazing animals ; in areas open to fires, dry and fallen trees alone should be taken out.

The first-named areas are not sufficient to meet permanently the Commissariat demands unless supplemented by the others ; and if the station is enlarged it may be necessary to add other areas more remote from Chakráta to the working circle. The Bhujkoti, Gutugád, Siári, Duliána and Inári blocks might thus have to be included which would be an addition of 1,580 acres of well-stocked forest, 674 acres containing oak, 792 fir, and 61 deodár, as the predominating species. A certain quantity of fuel will also always be obtainable from the Lokandi circle.

140. *Fire-protection and grazing-grounds.*—The first great improvement called for is the protection of the remaining forests in the working circle from fire, and this is the more important as they contain large quantities of oak, our most valuable fuel, although at present there are not quite 500 acres of oak forest protected from fires and grazing. As can be seen from the description of compartments, it is not worth while treating as forest Marauwa 3, Darna 4, Ekra 3, Kulered 4, Amlókri 3, and Leguna 1, aggregating 882 acres, and these should be set aside as permanent grazing areas. Marauwa 5, Hajáwa 5, the Ekra, Kulered and Amlókri blocks, containing 1,094 acres of oak forest, should be brought under fire-protection as soon as possible, the fire-lines being made so as to exclude the extensive areas of grassy and rocky slopes in the Ekra and Kulered blocks, which it would be superfluous to protect and which are valued as pasture grounds.

141. *Free grant trees.*—The number of trees to be given away annually to fre grantees from the working circle are as follows, full details being given in appendix 1 :—

Deodár	15
Kail	5
Fire	76
Oaks	120

142. *Selection fellings for fuel.*—For the Commissariat, the Lokandi circle is to provide half the fir fuel, but only about 3,000 stacked cubic feet of oak annually whilst an additional 6,000 stacked cubic feet of oak may be expected from the Hajáwa coppice. The Deoban circle will have to provide the remainder, which may be estimated from the present rate of consumption at 40,000 stacked cubic feet of fir and 30,000 stacked cubic feet of oak yearly. The fellings for fir will therefore be probably within the possible yield of the forests, even if only the areas closed to fires and grazing are worked ; but the oak forests, which are protected from fire

and grazing, are too small in extent to constantly furnish 30,000 stacked cubic feet of fuel. There is, however, good reproduction in some of the forests protected from fire only where grazing is very light, so that a good many large trees growing over over advance growth can be taken out without endangering the future of the forest, and it thus becomes possible to meet the anticipated demand for the next 20 years by these means. It is, however, of importance to protect a larger area of oak forest from grazing, and the best plan would be to take up certain areas in Cantonments which are all the more valuable by reason of the short distance the fuel would have to be carried, whilst a second important consideration is that this proceeding would not interfere with the grazing requirements of the Jaunsáris Proposals to this effect have been made in para. 164.

The compartments given below should be worked as much as possible in the order named and should last at least until the termination of this plan. To the Divisional Officer must, however, be left the discretion of so arranging these fellings year by year that the proportional outturn between the two kinds of fuel be maintained.

Name of compartment.	*Approximate area stocked with*				
	Oak.	Fir.	Kail.	Kokát.	Deodár.
Jádi 9	57	...	...	...	...
Mohna 14	...	10	...	...	...
„ 13	...	40	...	..	...
„ 12	..	25	...	23	...
Kanjátra 5	15	27	...	...	...
Mohna 11	9	...	...	...	...
„ 10	...	30	.	...	...
„ 9	35	...	...	...	...
Jádi 5 (oak portion)	7	...	...	...	...
„ 6	10	...	...	...	...
„ 7	37	...	...	...	...
Mohna 8	...	40	. .	...	...
„ 7	11	2	...	...	...
„ 6	6	20	...	...	...
„ 5	45	...	...	...	...
Hajáwa 1 (part of) ...	...	30	...	...	...
„ 4 (oak portion)	7	...	...	...	...
* „ 6	124	31	...	...	. .
* „ 7	22	68	...	...	...
* Mohna 3	78	...	...	...	...
Kanjátra 1	. .	92	...	...	..
„ 2	2	71	...	...	...
„ 3	...	101	...	. ...	...
„ 4	28	4	85	...	...
Thona 1	18	5	...	..	...
„ 2	...	61	...	...	...
„ 3	...	165	...	...	...
„ 4	99	...	...	...	...
* Kutniár 1	96	14	...	...	...
* „ 2	24	1	...	...	...
Bajamára 1	10	101	...	...	5
* „ 2	...	27	19	...	...
* „ 3	18	79	...	...	...
* Legúna 2	...	14	60	12	...
* „ 7	36	...	...	...	...
* „ 4	...	189	...	...	18
* „ 5	12	64	...	...	21
„ 6	35	...	...	...	...
* Darna 1	104	...	...	16	...
* „ 2	58	...	...	8	...
* „ 3	82	...	...	27	...
* Dauda 1	61	...	...	..	...
Total ...	1,146	1,339	173	86	44

All these compartments are fire protected, but those marked with an asterisk are open to grazing, and have been specially selected for working, principally on account of the good advance growth which already exists in many of them. The peculiarities in the working of each separate compartment are given in Appendix C. under the heading "Treatment" and the instructions given there should be carefully followed.

The use of the saw in felling trees in this circle should be insisted on except perhaps in the case of large and knotty old oaks. The fuel contractors are in the habit of felling the trees rather too high above the ground, and although a considerable improvement has taken place of late years, this tendency must be checked and a

fine should be imposed on the contractor for every tree improperly felled. The hillmen are also accustomed to leave knotty or partially hollow logs unsawn, thus causing a waste of material and giving the coupe an untidy appearance. This the ranger should be instructed to rectify and see that all pieces fit for fuel are properly utilised.

143. *Utilisation of dead and fallen trees.*—At present a great deal of fuel is lost by allowing dry, standing or fallen trees in compartments which are not being worked to rot, and there is probably three years' supply of fir fuel available from this source alone; but such trees are scattered all over the range, and it would not pay to make fuel roads for the sake of extracting a few stacks of wood only. It is therefore suggested that all compartments where fuel roads have been made and all accessible portions of other blocks should be gone over once in five years and all the dry and fallen wood in them cut up into fuel and taken to Chakráta. This might be done in the following order: —

		Number of dead and fallen trees.		
		Firs.	Oaks.	Other kinds.
First year	Duráni	498	77	72
Second „	Kanjátra and Thona	94	8	20
Third „	Jádi and Darna	238	112	12
Fourth „	Hajáwa	143	28	7
Fifth „	Legúna and Bajamára	177	40	120

and then over again, other blocks being included if necessary; but of course the whole of the trees given above will not be available, some of them being in inaccessible places. It might be profitable to make some roads in Duráni where there is such a great quantity of dry wood within a short distance of Chakráta.

As Mohna is now being worked the dry wood can be taken out at the same time as the green fuel.

Of course it saves a great deal of trouble to have all the fellings in one spot and not to pick up dry wood here and there, but it cannot be called proper forest management to allow such great waste; and now that there is a good ranger in charge no great difficulties should be experienced in obtaining annually 20,000 stacked cubic feet of fuel from this source, the amount estimated by Sir D. Brandis.

144. *Cleanings amongst young kail.*—This has been prescribed in the kail areas in Kanjátra 4, Bajamára 2, Legúna 7, and Duráni 2, and provision for this work has been made in para. 177. The young kail which are cut down or girdled must be left on the ground unless close to a fuel road, when the portions that could be utilised as fuel might be taken away.

145. *Plantations.*—There are 237 acres of grassy blanks suitable for planting purposes in the areas at present close to fires and grazing, and provision has been made for re-stocking them by the plantation scheme in para. 175.

146. *Export roads.*—About 35 miles of fuel paths will be required for working out fuel from the compartments enumerated in the table, and in addition a fuel path about three miles in length will have to be made connecting the Danda block with the Kundár-Chakráta fuel road, which it should join at its present termination at pillar No. 8 below the Chandúri peak. The requirements of each compartment are given under the heading "Treatment" in the description of compartments.

IV.—THE KARSHU COPPICE.

147. A coppice of bán oak has already been started at Kurwa, and it is proposed to form a similar one for karshu of about the same area and on the same rotation, twenty years. The best place for such a coppice would seem to be the upper portion of the Gedi khad, Hajáwa 8, where there is a dense growth of karshu saplings and poles extending right up to the top of the Tipra tiba. The area, 48 acres, is not, however, quite large enough for our purpose, and it will be better to add to it 12 acres in Jádi 9, which can be coppiced after the Hajáwa portion has been finished. The rotation is quite an arbitrary one, as there are at present no data for determining the proper period. The area in Hajáwa should be divided into three-acre plots as has already been done at Kurwa, and these plots should be numbered in the order in which

they are to be coppiced. The coppicing should take place in November and December before the snow falls and from fifteen to twenty trees per acre should be left as standards The standards will never be of any use as timber, and the only object in reserving them is that in converting a high forest into coppice it is important to keep some seed-bearers to fill up the gaps which are certain to be formed by a number of the older trees failing to coppice properly. Stumps over one foot in diameter need not be dressed, as larger ones do not, as a rule, send out good coppice shoots. The result of the coppicing should be carefully watched and acorns sown if necessary in the blanks.

When the area has been properly divided up a map should be prepared on the scale of 20 inches=1 mile, showing all the divisions, and on this map particulars of the fellings can be subsequently entered year by year.

The yield from the coppice will probably be about 2,000 stacked cubic feet of fuel per acre and will form a part of Commissariat fuel supply.

V.—RAURA CIRCLE.

148. This is a small detached block of 106 acres, which it is proposed to set aside for the supply of fuel to the rifle range, its distance from the range being only two miles.

It actually contains :—

Name of species.	V. class, 3"—6".	IV class, 6"—12".	III. class, 12"—18".		II class, 15"—24".		I. class, over 24".			
							Green.		*Dry.*	
			Sound	Unsound.	Sound.	Unsound.	Sound	Unsound	Erect.	Fallen.
Chír	428	125	47	...	61	1	4	..	..	...
Oak (bán with a few inai).	313	548	464	111	387	91	833	137	4	1
Buráns, ayár and kokat.	806	1,100	291	177	97	76	27	30	...	1

The annual consumption of fuel on the rifle range may be put down at about 2,500 stacked cubic feet and this can easily be met from Raura.

149. The unsound trees should be cut out first, where not required as seed bearers ; not more than 25 I. class oak should be cut in any one year, and none but unsound II. and III. class ones, whilst some buráns, ayár and kokát can also be felled ; but the chír are all young and none need be cut. Amongst the old bán are many of great size which it is difficult to convert entirely into fuel, and when any such are felled as much as possible should be cut up and stacked, and when this has been passed by the ranger the remainder may be made into charcoal, but the contractor should not be allowed to exercise his discretion in the matter, or he will convert the whole into charcoal. The block must be protected from grazing, otherwise it will be inadvisable to cut many green trees in it, and other arrangements than the above must be made for the rifle range fuel supply. There would be no objection, however, to allow grass-cutting.

VI.—THE BAN COPPICE.

150. This coppice is intended to provide fuel for the Military Works lime kilns and for the Brewery, the annual requrements being approximately :—

	Stacked cubic feet.
Military Works	3,800
Brewery	1,200

The Brewery also requires about 1,000 maunds of charcoal. Enquiries have been made from the Military Works Department as to what its normal annual requirements in fuel are likely to be, and they will probably be about the quantity given above, subject, however, to considerable fluctuations year by year. The situa-

tion of Kurwa on the cart road is a great convenience, as the lime can be so easily carted about.

The Military Works Department should be requested to indent yearly for their requirements in fuel from this block before the coppicing takes place, as fuel can only be supplied from the coppiced area, and no irregular fellings can be permitted. It is only after the requirements of this Department have been met that fuel can be supplied to the Brewery. In case any balance remains over it should be carried to Chakráta for the Commissariat, and it will be cheaper to cart it up at three annas a maund than to carry it on mules' backs.

151. *Treatment.*—The coppicing should be done, as hitherto, in December and January, one sub-compartment being coppiced each year in the order in which they are numbered on the accompanying tracing. From ten to twenty standards should be left per acre, and no ayár stumps need be dressed, as the species is such a worthless one, whilst only stumps one foot in diameter or less of other species require dressing; the other ones, not, as a rule, sending out coppice shoots. The result of the coppicing operations should be carefully watched and blanks filled up by sowing bán acorns or pine seeds.

After all the sub-compartments in Kurwa 2 have been coppiced it may be found that the rotation is too short, *vide* para. 93, and that the first areas are not yet ready for re-coppicing. In this case a portion of Bándla should be coppiced and protected from grazing, but it will not probably be necessary to close more than 20 acres.

Kurwa 1 should be coppiced and planted up within the next three years in accordance with the plantation scheme.

VII.—BHUJKOTI CIRCLE.

152. This working circle has been formed for the supply of spruce timber to Chakráta, and of the following trees as per Appendix I., to free grantees from khats Kailo, Bamtár, Birmau, Dwár, Bangaon, Seli and Koru.

Deodár,	...	...	... 33
Kail	...	...	... 12 Some of these can come from Konain block.
Chír	...	...	... 8
Firs	...	...	about 25
Oaks	...	...	... 30

The results of the enumeration survey are as under, deodár only having been counted in Pánikanal :—

Name of species.	V. class, 3"—6".	IV. class, 6"—12".	III class, 12"—18".		II class, 18"—24".		I class, over 24".			
							Green.		*Dry.*	
			Sound.	Unsound.	Sound.	Unsound.	Good for timber	Not good for timber.	Erect.	Fallen.
Deodár ...	43,832	14,842	5,113	337	3,730	404	900	5,257	340	397
Kail ...	12,988	3,820	1,037	58	592	65	801	133	87	13
Chír ...	338	1,035	1,006	5	751	4	627	3	4	2
Firs ..	64,896	31,364	11,591	657	6,038	626	7,822	1,191	673	235
Oaks ...	22,757	18,567	8,816	1,977	3,733	1,203	3,167	1,867	118	86
Walnut ..	103	153	119	15	85	18	51	24	7	1
Burána, ayár, and kokál.	47,202	21,025	5,421	1,238	1,118	575	613	433	110	27

Compartments 3 and 4, Siári and 2, Gutugád, contain a considerable number of tall well-grown spruce with long clean boles and should suffice to supply Chakráta with spruce timber until the end of this plan.

The oaks are mostly found in the lowest compartments of the circle, between 11 and 12 miles from Chakráta, and there is as yet no market for them, but some can perhaps be sold to charcoal-makers.

The Gutugád and Bhujkoti blocks are about the best places for walnut in the Deobán range, but even here the number of trees is insignificant.

The capabilities of the circle are at present much in excess of the demand, and this will probably continue to be the case for the next twenty years, but it may be necessary hereafter, if the consumption of fuel at Chakráta increases considerably, to include some of the blocks in the Deoban Working Circle.

158. *Thinnings.*—Deodár being the most important tree, whilst the market for the other species is at present *nil* or at the best very limited, it is important to encourage the former species as much as possible. The forest is in many places dense and the young deodár are undergoing suppression, so that the usual thinnings are required and should be carried out in accordance with the scheme given in paragraph 177.

Large spruce with long clean boles fit for timber should only be exceptionally girdled save in Panikanál, and no oaks should be girdled in Karáli 2, as they are not only valuable to the villagers for lopping purposes, but may perhaps hereafter be utilised for lime-burning.

154. *Plantations.*—In view of the sowing and planting works which it has been recommended to undertake in other working circles of the range, it is not considered advisable to prescribe others here.

155. *Export roads.*—Only about a length of three miles of timber-carrying paths will have to be made.

VIII.—PANDÁWA CIRCLE.

156. This working circle, consisting of the Pandáwa block and compartment 1, Karámba, has been formed for the supply of oak fuel for lime-burning to the Military Works Department. The quantity of oak it at present contains is as follows, exclusive of bán, which is too low down to come into use:—

Name of species.	V. Class, 3"—6".	IV. Class, 6"—12".	III. class, 12"—18".		II. class, 18"—24".		I. class, over 24".			
							Green.		*Dry.*	
			Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.
Pandáwa, Karshu ...	9,136	5,714	2,872	150	486	92	168	93	...	2
Moru ...	1,873	1,743	670	132	274	107	313	265	...	2
Karámba 1, Karshu ..	7052	5,240	2,614	476	697	297	305	425	14	11
Moru ...	21	17	9	2	3	2	1	5	...	1
Total ...	18,082	12,823	6,165	760	1,460	498	787	788	14	16

The lime-burning has hitherto been confined to the Pandáwa block and the fellings chiefly to the karshu area in it which covers only 72 acres. It is believed that an ordinary kiln yielding 500 cubic feet of lime requires about 900 stacked cubic feet of fuel and 1,000 cubic feet of limestone.

The annual requirements are very uncertain, but will not probably exceed 5,000 stacked cubic feet of fuel. It is possible that the unsound I., II., and III. class oaks in Pandáwa will go a long way towards meeting this demand for the next twenty years, but eventually Karámba 1 will have to be resorted to. Not more than 6,000 cubic feet stacked should be cut in any one year unless there happens to a balance over from previous years.

157. The present system of marking the trees quite close to the limekilns and allowing the lime-burning contractors to fell the trees and carry or rather drag them to the kilns is inconsistent with good forest management, and here, as at Matkúngra, it should be discontinued and the fuel required delivered by the Forest Department at the kilns themselves as is now down at Kurwa.

158. Hitherto the whole of Pandáwa has been open to grazing, but it will be necessary to close the 72 acres of karshu forest around the Pandáwa hut, and this will be no hardship to the villagers, as it is miles away from the nearest village and the only other closed forest in the Bislár khat is a portion of Karámba.

IX.—MATKÁNGRA CIRCLE.

159. This small working circle is intended for the supply of fuel to the Military Works for their soorki and lime kilns in Matkángra. Their requirements are very uncertain, but will not probably exceed 4,500 stacked cubic feet per annum, and it is not even likely that so much will be required during the incumbency of the present Executive Engineer, as he does not approve of "soorki," and none will be burnt whilst he remains in charge of the division. The lime at Matkángra is good for white-washing but not for building purposes.

160. *Treatment.*—Compartments 2 and 3 would probably suffice for this supply, but as the requirements may be greater, and as the felling of green trees must entirely cease in compartment 4 which is open to grazing, whilst most of compartment 1 consists of grassy blanks, the whole block may be formed provisionally into one circle with the understanding that this arrangement will probably have to be modified at the end of this working plan and a portion of the block included in the Deobán Circle. The contents of the block are given in Appendix A., and the compartments should be worked in the order 3, 2, 5, and 1, compartment 4 not being touched. The maximum annual amount should not exceed 4,000 stacked cubic feet of oak, unless more be required by the Military Works Department, when as much as 6,000 feet can be worked out.

Old unsound burán and kokát can also be cut out over advance growth. Sowing and planting will be carried out in accordance with the plantation scheme. Portions along the Jádi road require fencing to prevent cattle trespass in the protected compartments.

X.—CANTONMENT CIRCLE.

161. The two blocks Lurli and Sutoli, at present under the charge of the Forest Department, are too small to be worked regularly apart from the other forests, and it is now proposed to place under the management of this Department three more blocks. If this can be arranged the Cantonment areas under forest management, exclusive of the Forest garden, will be:—

		Acres.
Lurli		190
Sutoli		188
Chilmeri		568
Patiadhár		429
Gobráni		210
	Total ...	1,585

These blocks were valued and described at the beginning of the year with the following results:—

Name of species.	IV. class, 6"—12".	III. class, 12"—18".		II. class, 18"—24".		I. class, over 24".				Total.
		Sound.	Unsound.	Sound	Unsound.	*Green.* Sound.	*Green.* Unsound.	*Dry.* Erect.	*Dry.* Fallen.	
Kail	12	...	...	...	...	...	...	...	...	12
Chír	7	...	...	...	...	...	...	...	...	7
Rai	1	...	...	...	...	...	...	...	...	1
Morn	107	21	34	...	7	...	4	...	...	173
Ban	16,910	7,219	626	2,713	536	2,753	1,130	6	2	31,901
Bánráns	15,752	4,300	1,704	1,227	991	538	730	2	...	25,335
Ayár	15,491	3,845	769	564	257	160	92	...	...	20,678
Kokát	6,256	465	232	70	54	23	21	...	...	7,121

It will be observed that the number of unsound trees is very large, and this may be attributed to fires and grazing in the past, as also to the fact that many of the I. class trees are past their maturity.

162. *Treatment.*—As these forests have to be maintained as an ornament to the station and not worked simply from an utilitarian point of view, it is proposed only to cut out the unsound trees during the next 20 years, and from the figures given above it will be seen that about the following number can be felled annually. It will also be possible to cut about 2,000 fagots from brushwood, &c.:—

Species.	III. class, 12"—18".	II. class, 18"—24".	I. class, over 24".	Estimated yield in stacked cubic feet.
Bán	30	25	60	9,000
Burúns	60	45	35	4,600
Ayár	40	15	10	1,000
Kokát	12	3	1	400
Total ...	...	...	...	15,000

163. The revenue and expenditure may be estimated as follows:—

Revenue.	Rs.	Expenditure.	Rs.
9,000 cubic feet of oak, at Rs. 11 per cent.,	990	Maintenance of boundaries and demarcation of chaks.	38
6,000 ditto of burans, &c., at Rs 8 ditto,	480	Cutting and stacking 15,000 feet of fuel, at Rs. 2 per 100.	300
2,000 fagots, at 3 annas each .	375	Carriage of ditto, at Rs 2 per 100 ...	300
100 grass-cuts for six months, at 8 annas each per month.	300	Re-stacking ditto at 2½ as. „ ...	23
		Preparing and delivering 2,000 fagots, at 2 annas each.	250
		Interest at 5 per cent. on Rs. 300 capital expenditure on chauki and depôt at the bazár.	15
		Pay of chaukidár for 12 months, at Rs. 10 per month.	120
		Making and repairing paths	50
		Burning fire lines	50
		Plantations	200
		Pay of two forest guards, at Rs. 8 per month ...	192
		General control, at 5 per cent. on the revenue ...	107
		Annual rent proposed to be paid to the Cantonment Fund.	500
Total ...	2,145	...	2,145

The Forest Department will thus be able to lease these forests for Rs. 500 per annum if the Cantonment Committee agrees to a tax of 8 annas per month being levied on grass-cuts, and it could pay still higher rent if the Committee desired to fix the price of fuel sold to residents and at the bazár at a higher rate than that estimated for above, or did not wish so much money to be spent on planting work.

164. *Effect on Cantonment Funds.*—It is necessary to examine in what way the leasing of these blocks will affect the Cantonment Funds. The revenue at present derived from the whole of the Cantonment forests, including those which it is proposed to lease, consists of three items:—

	Rs.
(1) Revenue from sale of dry wood, felled by a contractor, who pays Rs. 13-8-royalty per 100 maunds, average for two years 1885-87 . .	337
(2) Lease for five years to Kewal Ram of the right to collect grazing dues at the rate of Rs 2 per animal per annum, lease expiring in 1891-92 ...	800
(3) Lease for five years to Kewal Ram of the right to cultivate two-thirds of all waste lands in Cantonments, the lease expiring in 1891-92 ...	90
Total	1,227

The enumeration surveys show, *vide* para. 161, that no more dry wood remains in the blocks valued, and this is probably the case also in the remaining forests: so that the revenue under the first item will in future be almost *nil* unless it be determined to fell green trees, and this, if it is intended to keep these areas permanently under forest, should only be done where domestic animals are excluded, as grazing is particularly injurious amongst oaks.

It will be necessary, therefore, to modify the grazing contract on its expiration in 1892, and to exclude from the areas open to grazing the Chilmeri, Patiadhár, and Gobráni blocks, with the exception of 240 acres, *viz.*, compartment 4, Chilmeri, and compartments 2 and 4, Patiadhár, which are open grassy blanks dotted with a few trees only, save a fringe along the larger nálas. It has been considered necessary to include these grass lands in the areas to be leased for purposes of control, as they run right through the Chilmeri and Patiadhár blocks, and it may also be necessary to make paths through them for the export of fuel from the neighbouring compartments, but grazing need in no way be interfered with. The new area which should be closed to grazing in 1892 amounts to 967 acres, so that the total area closed in Cantonments will then be 1,393 acres. Grass-cutting can, however, be allowed, and these blocks will be very valuable for this purpose, for all herbaceous growth in the open parts being cropped close by cattle, very little grass will be obtainable elsewhere. Excluding building sites, &c., there will remain over 2,000 acres of grass land and oak forest available for grazing purposes. Presuming that Kewal Ram receives dues on 600 animals which would give him a handsome profit on his lease, there would still, if these proposals be adopted, be more than three acres available for every animal, and this should more than suffice, since the average throughout Jaunsár is only one and a half acres a head. It must also be recollected that there are over 1,000 acres of open Government forest within a few miles of Chakráta, where cows, &c., required for the milk supply could graze.

No more land must be broken up for cultivation in the forest blocks and at the end of the present lease all large patches of cultivation which it is advisable to maintain as such should be marked off by pillars, and where the boundary is an artificial one a two-foot line should be dug from pillar to pillar. Small patches, on the contrary, which it is difficult to mark off, and which twist in and out amongst forest growth, should be abandoned and planted up. This work should be carried out by the Forest officer in consultation with the Cantonment Magistrate, and will not probably affect the Cantonment Funds adversely to the extent of more than Rs. 30 per annum.

As the supply of dry wood has been exhausted and it would be inadvisable to fell green trees on no system whatever, these proposals will have the effect of giving to the Cantonment Fund a permanent annual revenue of Rs. 500, whilst the services of one of the two Cantonment forest guards could be dispensed with, thus effecting a saving in expenditure of Rs. 84. It is probable, with the increase in the size of the station, that the value of the grazing lease will be considerably enhanced in spite of the additional areas suggested for closing, but supposing that it is renewed at its present rate only, the total forest revenue in 1892 is estimated as follows :—

	Rs.
(1) Dry wood from areas outside the leased blocks	50
(2) Grazing lease	800
(3) Cultivation lease	60
(4) Rent paid by Forest Department	500
Total revenue	1,410
(5) Saving of the pay of one forest guard	84
Grand Total	1,494

or an increase of Rs. 267 on the present amount.

165. *Proposed agreement with Cantonment Committee.*—If the Committee are willing to lease these blocks, an agreement had better be drawn up, and I would suggest the following clauses :—

1*st*,—That the following lands be set aside and placed under permanent forest management, the forest garden being specially devoted to the growth of fruit and vegetables and for rearing ornamental trees :—

						Acres.
Lurli	...	...	...	...	...	190
Sutoli	...	...	...	...	...	188
Forest Garden	...	...	...	...	...	48
Chilmeri	...	...	...	...	...	508
Patiadhár	...	...	...	...	...	429
Gobráni	...	...	...	...	...	210
				Total	...	1,633

The last three blocks are to be properly demarcated.

2*nd*,—The Forest Department agrees to lease the above blocks for 20 years at an annual rental of Rs. 500, undertaking to spend yearly Rs. 200 on plantations and to keep the residents of Chakráta supplied with fuel at the rate of Rs. 11 for oak, and Rs. 8 for burán, ayár and kokát per 100 stacked cubic feet, the maximum to be delivered in one year being 25,000 stacked cubic feet, any deficiency in the outturn of the Cantonment forests being made good by wood from other sources.

3*rd*,—The Committee on its side undertakes only to sell dry wood from the other forests under its care, and on the expiration of the cultivation and grazing leases in 1892—

(*a*) to have the cultivation which exists in the forest blocks demarcated, abandoning such small patches as interfere with proper forest management, but retaining the demarcated plots under its own charge ;

(*b*) to exclude from the new grazing lease all the above blocks with the exception of 240 acres of grassy slopes forming compartments 2 and 4, Patiadhár, and compartment 4 of Chilmeri as in the tracing attached ;

(*c*) to allow the Forest Department to levy a monthly tax of eight annas from each grass-cut for the right of cutting grass within the above areas.

The Committee will also make a free grant of land for building a chauki and forming a wood depôt in the Sadr Bazár, and the Forest Department is authorized to carry out all works necessary for working the forest blocks within the limits of the area leased without reference to the Cantonment authorities.

The conditions under which the Forest Garden is held will remain unaltered, but any fuel obtained from it should be considered as forming part of the outturn from the leased blocks, and no separate account need be furnished to the Cantonment authorities.

166. *Order of cutting.*—In case the forests are leased it will be best to work first the Lurli and Sutoli blocks, which are already closed to grazing. It will be advisable to remove the unsound trees in two instalments and not all at once ; thus the whole area will be gone over twice in the course of the next 20 years. The first working of the above two blocks may be expected to last until the end of the present grazing lease, when the other portions can be closed and the fellings continued in them. In case any unsound trees are extracted when there is no advance growth or seedlings, such spots must be immediately planted up.

167. *Management of the Forest Garden.*—The small area stocked with oak in the Forest Garden has been divided into five plots of about four acres each. One of these has been cleared this year, and the remaining four should be cleared during the next four years if transplants are available, and should be planted up with such exotics as have done best in the garden. The following kinds are recommended:—Pinus khasia, sinensis, maritima, sylvestris and laricio and cryptomeria japonica. It would be out of place here to enter into details about the treatment of the fruit trees and vegetables.

XI.—THE KALSI CIRCLE.

168. *Areas excluded from regular working.*—The portions which have neither been valued nor described nor divided into compartments are to be kept solely for the use of the villagers during the next 20 years for the reasons given in paragraph 58.

The best treatment for the remainder would seem to be the system of coppice with standards, most of the area not being capable of producing good high timber forest, whilst it is most desirable to get rid of the present stock of unsound and crooked stems which have no future before them, leaving the few well-grown trees as standards. The demand for this sort of produce is limited, and it is uncertain how much can be disposed of, so that it is very improbable we shall be able to coppice the whole area within 20 years, the term which it would seem reasonable to fix for the rotation, although at present there are no data available. Such then being the conditions, we can afford for the present to exclude from the coppice area certain compartments near Kálsi, the closing of which would inconvenience that town, as well as the flat ground at the junction of the Jamna and Tons which is grazed over by the cattle of Haripúr. The compartments thus excluded are :—

	Acres.
Haripúr 8 to 12, 17 and 18	544
Barabágh 3 and 4	244
Total ...	788

169. *Area to be treated as stored coppice.*—There remains an area of 1,094 acres to be treated on the coppice with standards system. Under this system it is essential to exclude grazing for the first five years in order to allow the young coppice shoots to grow up out of harm's way. As about 54 acres are, if possible, to be coppiced every year, this would mean that 270 acres will have to be closed to grazing, or less than one-seventh of the whole forest area near Kálsi, which does not appear to be excessive.

General sylvicultural reasons would lead us to arrange the annual coupes so as to follow each other on the ground in regular succession, but to avert the inconvenience which might be caused by having a large area closed in one spot, and also to avoid coppicing a large sál area one year and perhaps none the next, it is considered best to coppice the compartments in the following order, the portions coppiced being closed for five years. The rotation is taken provisionally at 20 years, but if this prove to be too short it can be prolonged by bringing some of the other compartments, for the present excluded, under the coppice *regime*. Barabágh 3, however, can never be treated on this system owing to the friable nature of the soil and the frequency of landslips.

Date for coppicing.	Name of compartments.	Area to be coppiced. West of Amlawa.	Area to be coppiced. East of Amláwa.
		Acres.	Acres.
1889-90	Haripúr 7	53	...
1890-91	Ditto 6	37	...
1891-92	Haripúr 5 (half of)	33	40
	Panjgáon 6 (ditto)		
1892-93	Haripúr 5 (half of)	33	40
	Panjgáon 6 (ditto)		
1893-94	Pánjgáon 2	...	50
1894-95	Haripúr 4	53	...
1895-96	Haripúr 16 (half of) .	55	...
1896-97	Haripúr 16 (ditto)	54	...
1897-98	Barabágh 1 (half of)	...	58
1898-99	Ditto 1 (ditto)	...	58
1899-1900	Haripúr 3	26	...
	Ditto 14 (one third)	10	
1900-01	Haripúr 14 (ditto)	10	33
	Pánjgáon 3		
1901-02	Haripúr 14 (one-third)	17	32
	Pánjgáon 4		
1902-03	Haripúr 2	26	...
1903-04	Ditto 1	43	...
1904-05	Pánjgáon 5	...	53
1905-06	Barabágh 2	...	91
1906-07	Haripúr 15	49	...
1907-08	Panjgáon 1	...	53
1908-09	Haripúr 18	54	...

The areas west and east of the Amláwa have been shown separately, as the coppicing has been so arranged as a convenience to graziers that the whole area closed will never be on one side of the stream only. Not less than 30 standards should be left to the acre, and they should consist of healthy well-grown sál, sain, haldu, gosám, and bákli with perhaps a few trees of other species, such as jáman, siris, &c.

The coupes, the standards being first marked and their numbers recorded in a control book, might be sold by auction in the autumn, one of the conditions being that the trees are to be felled and the produce removed or stacked outside the coupe within a certain time (perhaps by the end of February) so as to allow the stools to be dressed departmentally.

170. *Free grants.*—Those which have to be met from the Kálsi forest are as follows, and are for khats Haripúr Bias, Bána, Bissáhil, Pánjgáon, and Seli-Gothán.

Sál.	Haldu.	Sain.	Bákli.	Bakarla.	Sándan	Singár.	Khair.	Dhaura.	Karwas	Ballis.	Bamboos.
48	32	70	60	50	136	50	38	4	400	40	900

These demands should be met as far as possible from the areas outside the portion to be coppiced. The marking of the trees should never be entrusted to the forest guards, but should be done by the ranger in person, and as the cold season will be the most convenient time for this work, the siyánas of the five khats interested should be ordered to apply for their "rawánas" in December and not as is customary in March and April.

171. *Lopping rules.*—These rules (*vide* para. 30) should be strictly enforced and the lopping of sál, sain, haldu and gosám should be altogether stopped whilst bákli should only be lopped when unsound as much damage is done by Gujars and grain-carrying contractors who pass the four winter months at Kálsi and lop unrestrictedly to obtain fodder for their bullocks and buffaloes, grass being scarce.

173. *Permit system to be limited.*—The present system of selling standing trees for kurwas, ballis, tors, &c., by means of permits issued at the Kálsi chauki should be stopped immediately the coppice scheme is fairly started, as a plentiful supply of kurwas, &c., will be forthcoming from the coppiced areas.

174. *Fuel for lime-burning.*—The cutting of green fuel for lime-burning must also be discontinued from Barabágh 3, which is getting denuded, but some green fuel for this purpose not exceeding 3,000 stacked cubic feet can be cut annually from compartments 9, 10, 11, and 12 of Haripúr, although, if possible, the lime-burners should be induced by offer of lower rates to take their fuel from the areas which are being coppiced.

GENERAL WORKS.

Improvement of the boundaries.

174. Where the outer boundary does not follow a stream or a road it is usually marked off by a line of pillars, but owing to the complicated configuration of the ground one pillar is often not visible from the next, or it becomes hidden after a time by a dense growth of brushwood, and there is often in consequence uncertainty as to how the boundary runs in many places. The remedy is to cut a two-foot path from pillar to pillar wherever the boundary is not a natural one or a road does not already exist. Such a path has just been made from pillar 34, at Morrow's Neck to pillar 5 to the west of the Biti gád, and it should be continued all round these forests from west to east until pillar 34 is again reached. Then the outlying oak forests should be taken in hand, and finally that portion of the Kálsi forest which is to be worked. In para. 6 it is estimated that there are 73 miles of artificial boundary, and seven miles should be made every year, so that after ten or eleven years the whole work will have been completed.

It will then probably be found that there are an unnecessary number of outer boundary pillars and a hundred pillars should be inspected each year, the superfluous ones being removed and the others renumbered. This will take two or three years more, so that in from twelve to fourteen years the boundary will be in perfect order and defined beyond the possibility of dispute. The cut boundary line will prove of great service as an inspection path, can be utilised as a fire line, and if necessary could in places be enlarged into a fuel path.

The boundaries of the chaks which were demarcated last year are being defined in a similar manner to that recommended in the case of the outer boundary, and this work should be completed if possible within the year. After completion they should all be inspected to see that their boundaries have been laid down in accordance with the temporary demarcation made by myself.

Plantation Scheme.

175. It is proposed to sow or plant up all suitable blank areas in the first class forests and in all the closed II. class fuel forests in the range within the next twenty years according to the following scheme, deodár and kail being almost exclusively used in the I. class forests, and almost any kinds yielding good firewood in the fuel plantations.

Approximate date for sowing or planting.	Fuel Plantations.			Deodár Plantations.	
	Compartment.	Acres.	Species recommended.	Compartment.	Approximate area to be treated.
1889	Kurwa 1 ..	22	Bán, kail and chír *Acacia*...	Bodiár 7 ...	20
1890	Ditto 1 ...	22	Deourrens as an experiment...	Ditto ...	20
1891	Ditto 1 ...	23	Ditto ...	Ditto ...	20
1892	Kanjátra 1 ...	28	Ditto ...	Ditto ...	20
1893	Ditto 2 and 3 ...	32	Rai, kail and deodár ...	Ditto ...	20
1894	Ditto 4 and 5, Mohna 7... 8, 12 and 13.	27	Rai, moru, kail, deodár, karshu	Ditto ..	20
1895	Mohna 5 and 6 ...	23	Rai, moru, kail, deodár ...	Ditto ...	20
1896	Ditto 9 and 10 ...	20	Ditto ...	Ditto ...	20
1897	Matkángra 1 ...	22	Moru, bán, kail, and in rocky places cypress.	Ditto ...	20
1898	Ditto 1 ...	22	Ditto ...	Ditto ...	22
1899	Ditto 1 ...	21	Ditto ...	Ditto 6 ...	27
1900	Ditto 2 ...	19	Ditto .	Ditto ...	27
1901	Ditto 2 ...	18	Ditto ...	Ditto 5 ...	23
1902	Ditto 3 ...	20	Ditto ...	Ditto ...	23
1903	Ditto 3 and 5 ...	20	Ditto ...	Ditto 4 ...	25
1904	Ditto 5, Kopti 1 and 2 ...	23	Ditto, Rai in Kopti ..	Ditto 3 ...	17
1905	Thona 1, 2 and 3 ..	29	Karshu, rai, morinda, kail ...	Ditto ...	16
1906	Hajáwa 1 (partly under forest)	21	Rai, moru ...	Konain 1 and 7,	19
1907	Ditto 2 (ditto) ...	33	Rai, morinda ...	Ditto 2 ...	16
1908	Ditto 3 and 4, (ditto) ...	20	Rai, morinda, karshu ...	Ditto 3 ...	20
	Total ...	464			415

The exact position of these areas in each compartment are shown in the stock map.

In addition to these planting operations Rs. 200 will have to be spent annually on the same work in the Cantonment blocks if these are leased, and all the old plantations as well as the new ones will have to be carefully tended, whilst all blanks must be filled up as they occur.

It must be borne in mind that the table given above is not intended to be rigorously adhered to, as this would be impossible owing to the fact that seed is not always procurable. It should, however, be worked up to as far as possible, and in case the work falls into arrears every effort should be made in a good seed year to recover lost ground, and large nurseries should then be established in order to utilise as much as possible of the seed. It may be thought that Bodiár should be planted up more rapidly, but financial considerations and the numerous planting works in other parts of the division render this inadvisable.

Sites for deodár nurseries should be chosen in well-drained localities not exposed to severe frosts as are the low hollows in Bodiár; the soil should be good but not stiff, and there should be a certain amount of lateral protection on the south. The nursery beds should be terraced and made about four feet wide. The soil should be mixed with some good mould and the seeds sown in lines a foot apart in November and December. Germination takes place in March and April, and in the following July the young seedlings should be bedded out three inches apart in the lines, where they should remain for two or at the outside three years and should then be planted out in the forest. Whilst in the nursery the young plants should be protected in seasons of drought and frost by means of grass tatties raised a few feet off the ground, these being removed when snow falls, and an occasional watering in dry weather, if water is handy, would be very beneficial.

The young deodár should be put out on the blank slopes *immediately* the rains begin in horizontal lines of pits 5′ × 5,′ the pits being dug 2′ long × 1′ × 1′ and filled with good mould where the soil is poor and stony, or such soil should at least be sifted with the hand and freed from stones. It will be advisable to prepare these pits before the rains break, so as not to lose a moment in filling them up with transplants, as it is of the first importance that all the plants should be well established when the monsoon ends, to enable them to withstand the drought of November and the subsequent frosts, and they should be protected at such seasons by means of grass cowls, which will not cost much, for if this precaution be neglected the success of the plantation will be endangered.

In sowings deodár should be sown after the seed is collected in November, but kail, chír, and rai should be kept and not sown until the rains, as it is only then that they germinate, and if sown before they are liable to be eaten by birds, mice, &c.; in fact even in the rains it will often be necessary to protect them from such ravages by covering the pits with thorns, &c., and at Bodiár, where pheasants are common, it may even be advisable to plant kail and not to sow it.

Hitherto in a mixed plantation of deodár and kail it has been customary to have one row of deodár and one of kail, or these species in alternate pits. It is found, however, that in this way the kail affords little or no shelter to the young deodár and in future they should both be grown in the same pit, the young kail being cut away when no longer required as nurses, leaving about five per cent. to form part of the mature crop and to become the future seed-bearers. All the pits must be carefully drained, otherwise the plants remain yellow and grow slowly. Kail seed can usually be obtained in large quantities every year, and it will therefore be better at Bodiár and Konain first to prepare the pits and sow them up with kail in July, filling up failures next year with transplants from the nursery where a stock of young kail and deodár should be kept. When sufficient deodár seed can be obtained the pits containing the young kail which germinated in July can be resown on the sheltered side with deodár in the succeeding November, and blanks can be subsequently filled up by planting out two-year-old deodár from the nursery on the sheltered side of the kail and in the same pit. It is for this reason that the pits have to be made two feet long instead of the customary length of one and a half foot. In sowings generally only about ten seeds should be put in each pit and they should be separated as far as possible from each other and not put in all together. This is a necessary caution, as in several old sowings there was a lavish expenditure of seed, the young plants coming up in a bunch to the detriment of each other. The kail seeds had better be sown in the exposed half of each pit, so that the young plants may the more efficiently protect the deodár by which they are eventually to be replaced. In the rains the grass, if luxuriant, should be cleared immediately around the young plants.

In some of the rockier parts of Bodiár cypress might with advantage be planted out.

In the fuel plantations the same general remarks apply, but the pits need only be one and a half foot long. Although our experiments with Australian trees have been

so far a failure, I would yet recommend that we give them a further trial over a couple of acres at Kurwa, every precaution being taken to ensure success. *Acacia decurrens*, which is capable of withstanding long droughts and grows on exposed slopes and on any soil, might be tried, as well as other Australian species which have succeeded well at Rânikhet, whence seed might be obtained, as that produced there has proved to be fertile. The seedlings should be planted in lines four feet apart.

In Matkángra Sir D. Brandis recommended that a cypress nursery should be established, and an attempt made to plant out this species on rocky slopes having a south-easterly aspect, strong plants being used in order to ensure success; but sowings of cypress *in situ* are not advisable. Moru should only be sown in moist localities at cool aspects, bán on the more exposed slopes, and about six acorns per pit should suffice.

Collection of seeds.

176. Besides the seeds required for the local plantations numerous indents have to be met every year from various parts of the world. The supply is frequently insufficient either from a bad seed year, or from the forest guards neglecting to collect a sufficient quantity. Strict orders should be issued to all the guards in the range to collect a fixed quantity of different seeds every year and to report in case certain species have failed to produce seed. The number of good seeds per seer of the following species has been found to be—

Kail	...	...	...	...	...	...	15,500
Chír	...	...	...	...	...	...	9,200
Deodár	...	...	...	...	...	...	7,500
Bán	...	...	...	...	...	...	500

Mr. McDonnell says that when deodár are near one man can bring in two khilta loads per day or 300 cones, which should give 84 lbs. of cleaned seed, but that one man can only take out 4 lbs. of cleaned seed a day, so that the cost of collecting should be from 2½ to 4 annas per seer. In a good seed year therefore in Jaunsár the cost of collection should be less than four annas a seer, the rate usually paid. The rates for other kinds are given in Appendix M.

As a guide in collecting various seeds the following calendar, showing the months when the seeds of the more important species ripen, may be useful :—

February and March. .	Pinus longifolia.
May	Prunus Padus. Populus ciliata. Willows.
June	Morus serrata.
July	Quercus semecarpifolia.
August	Most maples. Pistacia integerrima. Sapindus detergens. Cedrela serrata. Quercus dilatata.
October	Abies Smithiana. „ Pindrow Pinus excelsa
October and November ...	Cedrus Deodara. Cupressus torulosa. Juglans regia. Æsculus indica. Quercus annulata. Rhododendron arboreum.
November	Acer lævigatum. Taxus baccata.
November to February ...	Quercus incana.

Thinning and Cleaning Scheme.

177. In several parts of the Karámba, Lokandi, Deobán, and Bhujkoti working circles there is a great deal of deodár reproduction either mixed with kail or with firs and oak. In either case numerous seedlings are undergoing suppression and are suffering from a want of light, so that thinnings and cleanings are urgently called for. This need will be met in a great measure in parts of Konain and throughout the Lokandi circle by the improvement fellings which have been arranged for, but amongst the young kail thickets and in the fir and oak forests, where fellings of these species for fuel or timber will not take place, it has been found necessary to draw up the scheme given below for admitting more light to the young deodár.

Date of operation.	*Cleanings amongst young kail.*		*Girdling firs, oaks, &c., and other thinning operations.*		
	Compartment.	Approximate area to be treated	Compartment.	Approximate area to be treated	Remarks.
		Acres.			
1889 ...	Missau 4 and 5 ...	60	Konain 3, 6 and 8 ...	40	No oaks to be girdled.
1890 ...	Maraúwa 1 and 2 ...	78	Karámba 1 ...	50	No good first class rai fit for timber to be girdled.
1891 ...	Kanásar ...	50	„ 2	200	
1892 ...	Kopti 4 ...	40	„ 3 ...	150	
1893 ..	Kanjátra 4 ...	50	„ 4 ...	200	
1894 ...	Duráni 2 ...	23	„ 5 .	150	
1895 ...	Bajamára 2 ...	39	„ 6 ...	200	
1896 ...	Legúna 7 ...	20	Rikta 1, 2 and 3 ...	100	
1897 ...	Konain 4 and 5	30	Siári 3 and 4 ...	180	
	Konain 7 and 8.	60			
1898 ...	Karáli 2 and 3 ...	90	Gutugad 3 ...	150	
1899 ...	Missau 4 and 5 ...	Same areas over again and other places where reproduction has sprung up.	„ 5 ...	60	
1900 ..	Maráuwa 1 and 2 ...		Bhujkoti 2 ...	90	
1901 ...	Kanásar ...		„ 3 .	150	
1902 ...	Kopti 4 ...		Panikanál 1 ...	100	
1903 ...	Kanjátra 4 ...		„ 2 ...	200	No oaks to be girdled.
1904 ...	Duráni 2 ...		Konain 3, 6 and 8 ...	...	
1905 ..	Bajamára 2 ..		Karámba 1 ...	...	No good first class rai fit for timber to be girdled.
1906 ...	Legúna 2, Konain 4, and 5.		„ 2 ...	...	
1907 ...	Konain 7 and 8 ...		„ 3 ...	...	
1908 ...	Karáli 2 and 3 ...		„ 4 .	...	

It will be observed from the above scheme that it is contemplated returning to the same compartments and renewing the operations after an interval of ten years in the case of the kail areas, and of fifteen years in the case of the fir and oak areas. The cleanings and thinnings must therefore be carried out in such a manner that their beneficial effects last for these periods. The kail which grows so much faster than the deodár should be cut out or girdled freely, leaving however a sufficiency of pine to afford lateral protection to the young deodár, but destroying all those at present overtopping the more valuable species or which are likely to prove injurious to them before the end of the ten year period. It would probably be better to do the cleaning in five years instead of ten and to return every five years over the same ground, and the programme should be modified accordingly if it be found possible to procure the additional supervision and labor necessary to carry this out. Wherever possible the kail cut down or girdled should be utilised as fuel for Chakráta and not left in the forest, where the presence of many dry saplings and poles will cause fires to to be dreaded and will encourage insects.

The thinning in the fir and oak forests should be conducted according to the rules laid down by Mr. Fernandez in the Mundáli plan, omitting rule No. IV., and the young deodár should be completely freed from all cover overhead, all trees being girdled or cut down which at present overtop them or are likely to do so within the next fifteen years.

Export works.

178. *The sledge road.*—The export works will be solely connected with the transport of timber and fuel to Chakráta The timber will have to be carried as hitherto on men's backs and only about five miles of timber-carrying paths will have to be made in Karámba and Siári.

It will be observed from what has preceded that the entire fuel supply for the Commissariat will be taken from blocks along the great Deoban ridge, if we except the Dárna and Dauda blocks, which may have to be worked towards the end of the term of this plan. All the fuel will have therefore to pass by Deobán, and it is from this point only that it might pay to substitute some other mode of carriage for that by mules. Last year (1887) Mr. Hobart-Hampden drew up a specification for making a sledge road from Deoban to Chakráta which has been printed and to which reference should be made for details. His estimate of the cost of construction may be accepted, but the map is a little misleading, the area shown as tapped by the sledge

road being too large and the stock in some of the blocks being incorrectly given ; *e.g.*, Ekra and Kulered, which are stocked almost entirely with oaks and not with firs as stated. It is proposed to supply the bazár and residents of Chakráta and the Brewery from forests whose produce cannot be exported *viâ* the sledge road, whilst the fuel for the Military Works Department is consumed locally. Only the Commissariat fuel, therefore, will be brought down the road, and the annual quantity for the next 20 years may be estimated at—

	Mds.
Fir fuel 80,000 stacked cubic feet	25,000
Oak „ 40,000 .ditto	16,666
Total ...	41,666

Mr. Hobart-Hampden estimates the cost of carriage of one maund of fuel by sledge at 2·6 pies per mile, the rate being based on that now in force at Deota, whereas by mules the cost per mile is for fir fuel 6·9 pies and for oak 6·3 pies per maund. As the Deota rates are for carrying sleepers and as it is more difficult to pack fuel in a sledge, it will perhaps be on the safe side if we take 3 pies per mile as the rate which will have to be paid for sledging fuel. Since it may not be possible to carry all the timber scantlings, which vary greatly in their dimensions, by sledge and the quantity is small, it will be safest to neglect it and to consider only the fuel carriage. The length of the sledge road will be 3¼ miles, whilst that of the present road is 3½ miles, and the cost of the two methods of transport may be compared as under :—

By mules.	Rs.	By sledge-road.	Rs.
Carriage of 25,000 maunds of fir for 3¼ miles, at 6·9 pies per maund per mile	3,337	Carriage of 41,666 maunds of fuel for 3¼ miles, at 3 pies per maund per mile.	2,046
Carriage of 16,666 maunds of oak for 3¼ miles, at 5·3 pies per maund per mile.	2,031	Renewals and repairs to sledge road .	600
Repairs to Deoban-Chakráta road necessitated by the mule traffic.	45	Loss of grazing dues now charged for mules.	200
		Annual saving effected	2,567
Total ...	5,413	Total ...	5,413

The original outlay being estimated at Rs. 10,230, the profit would be 25 per cent., and it is therefore recommended that this work be undertaken as soon as possible.

Mr. Hobart-Hampden only puts down Rs. 290 per annum for repairs, but this has been increased to Rs. 600 to allow for renewals of timber which will probably be heavy at times, although not for the first few years. The deodár timber required can come from Kanásar and Missan, old branchy trees being used, as there can be no great objection in a rough work of this kind to knots, &c. It is possible that straight karshu ballis would do for the sides, and if so the cost of construction would be considerably lessened.

179. *Wire tramway not feasible.*—It has been suggested that a wire tramway might be preferable to a sledge road, but this is out of the question on the ground of expense, even if it were otherwise suitable to the place. The proposed wire tramway from Naini Tál to Katgodám is estimated to cost nearly Rs. 20,000 a mile and repairs Rs. 2,000 per mile, so that even if one could be made from Deoban to Chakráta for half this sum the cost would be altogether prohibitive.

180. *Construction of wheeled tramway to be considered.*—When the sledge road has been completed and is in working order, it may be considered whether it would not pay to make a wheeled tramway in continuation of it as far as the Parade fuel-shed, where about half the fuel will have to be taken, or whether it would not be cheaper to carry the fuel there by means of carts with low wheels made expressly for the purpose, rather than on mules' backs.

The lower Mohna road to Kandál was originally laid out at a fairly even gradient with the idea of laying down a tramway on it, and it has been thought that it might

be possible to extend this to Pandáwa with a break only at Chandúri láni and thus to tap all the eastern portion of the range. A one-foot line was accordingly laid down last year, but the Duliána cliff proved an insurmountable obstacle, and the project had to be abandoned The one-foot line, however, where it runs through Hajáwa 7 can be widened and utilised as a fuel road when the time comes to work this compartment.

181. *Fuel paths.*—Nearly 60 miles of fuel paths will be necessary to open out all the compartments prescribed for working during the next 20 years, or about three miles a year. Hitherto such paths have been made in rather a hap-hazard sort of way, and there have been instances in which the fuel has been first cut and stacked and paths made subsequently up to the stacks. It is most important, however, that these paths should be properly laid out, as it is often possible to save a mile or so of carriage and thus bring the forests so much nearer the market. Whenever, therefore, a compartment is about to be worked for the first time, a regular plan should be drawn up, showing the best method of laying out the roads and the nearest line of export to Chakráta. Take, as an example, compartment 5, Missau. The export might be made at present either *viâ* Koti, Kanásar, and Deobán, *viâ* Lokandi láni and Deobán or *viâ* Lokandi láni and Jádi. On working out the distances, however, it is found that the shortest route of the three is the one *viâ* Koti, Kanásar, and Deobán, and this would of course be taken were it not that by *making* a path from the Missau road close to the Missau néla and through the Asmári block to Thona láni we can shorten the distance by nearly a mile, and by means of this new path can also tap Missau 4 and two compartments of Asmári. The distance from Lokandi láni to Chakráta *viâ* Deoban is a mile and a half less than that *viâ* Jádi, and the latter road should therefore only be used for produce coming from the lower parts of the Kutniár and Jádi blocks, from Dárna and from most of Matkángra.

182. *Present method of calculating distances from Chakráta to be changed.*—Now that all the blocks have been divided into compartments of fairly small size it will be better to pay for the carriage of fuel and timber according to the mean distance of each compartment from the forest chauki at Chakráta instead of measuring up the exact distance of each stack of fuel or each lot of karris as the case may be. In this way much time and labor will be saved, whilst it will do away with one very feasible method of swindling by the addition of a quarter a mile or so to the real distance. A table showing the mean distance of every compartment from the chauk is given in Appendix N., but the figures there given are liable to correction, as paths in many instances have not yet been made. They should only, however, be altered with the sanction of the divisional officer, who should initial the necessary corrections in the appendix. When fuel is carried to the Parade ground shed an addition of a mile and a half must be made to the figures given for all blocks north of Chakráta, and a similar amount deducted for blocks south of the station.

Communications and Buildings.

183. The following roads which are, as it were, the main arteries of the range, should always be kept in good order and be passable for mules :—

Chakráta-Tons road.
Deoban-Bodiár „
Deoban-Kanásar „
Deoban-Konain lower road
„ „ upper „
Missau road
Lower Mohna road to Kandál.

Ordinary fuel roads or timber-carrying paths when no longer wanted for export purposes need not, as a rule, be kept in repair, but they will not altogether disappear and can be restored when again required.

If the coppice scheme at Kálsi proves feasible a cart road will have to be made from the Chakráta road at pillar No. 1 of the Beyaski chak, skirting the foot of the hills to the Tons, and another branch from the point where the Chakráta road nearly touches the Amláwa, across that stream through the Pánjgáon block, between the isolated hill forming compartments 3 and 4 and the base of the mountain, following more or less the present foot track, whilst it may also be necessary to bridge the Amláwa.

The Konain rest-house will have to be rebuilt before the end of this plan and should be constructed of solid masonry after the style of the one at Bodiár. Some stables and out-houses should be built at Koti Kanásar and the present log hut improved, a fire-place being added.

It is believed that a rest-house is to be built at Kálsi in connection with the river arrangements, and this will at the same time be of great service in the winter months for inspecting the Kálsi forest. Quarters should also be provided for the ranger, and perhaps the cheapest plan would be to add a room to the present Kalsi chauki.

Chaukis for forest guards on the plan of the one at Koti-Kánasar should be built at Baniána, Jadi, and Masshak, the forest guard of beat No. 5 living at Jádi during the winter in order to check illicit lopping, whilst the forest guards in charge of beats Nos. 9 and 10 (*vide* para. 124) will live at Masshak during the same season.

A place for the chauki at Baniána has already been chosen, the site being a circular field 20 poles in area, No. 628 on the settlement map, belonging to Ram Chand, of Baniána, who has agreed to sell it for Rs. 12, whilst Rs. 3 will have to be paid to Ram Chand and Hari Ram of the same village for right-of-way through some other fields. The chauki is required for the forest guard in charge of beat No. 8.

A small wooden chauki should be built at Lokan li láni to check the export of free grantees' timber. All existing buildings should be kept in a proper state of repair.

Regulation of Forest Privileges.

184. (1) *Timber.*—Hitherto free-grant trees have been marked in an irregular manner, the same khat often taking trees from different localities, and the villagers frequently being allowed to select their own trees regardless of the well-being of the forest. This must cease, and all trees should be marked by the divisional officer or the ranger as much as possible compartment by compartment according to the usual method of making selection fellings, no trees being marked under six feet in girth unless for a particular purpose at the express desire of the villagers.

Appendix I. gives a list of forest blocks from which these free-grants are to be made in the future and the names of the khats which they are intended to supply. In the case of deodár the list includes free-grants for the whole of Jaunsár, but for the other trees only free-grants from the forest blocks in the Deoban range are given. It is possible that certain forests such as Bomnai and Riknár, which have not been valued, have an insufficient number of large trees to supply the khats for which they have been set aside, and in this case the scheme will have to be modified, but no trees should on any account be given away free or sold from the three I. class forests of Bodiár, Kanásar and Konain, nor from Karámba and Rikta, except the twelve trees given in the list, as the two latter blocks are reserved for the deodár supply of Chakráta.

In case any khat does not take out its full number of trees in any one year it may be allowed, at the discretion of the divisional officer, and as a concession not as a right, to extract the balance in the year following. In case a khat still requires more trees, the rules in para. 28 may be carried out, each khat getting its trees from the forests set aside for it with the exception of the Lokandi Working Circle, where only one extra tree per khat should be sold, and of the Karámba Working Circle,

where none at all should be sold, and the khats which get their annual grants from these forests must obtain their extra trees from more remote forests, such as Bomnai, Riknár, Majbíra, and Lokár in the Báwar range.

The siyánas of each khat are accustomed to apply for their free-grant permits in the months of April and May. It should now be arranged that the siyánas of khats who get their trees from the same forests should apply at the same time, so that one date may be fixed for marking their trees which will save a great deal of the ranger's time, *e.g.*, the siyánas of khats Bamtár, Birmau, Dwár, and Bangáon will have, say, the 25th of the May fixed as the date on which their trees will be marked, as they all get their trees from the same forest blocks, *viz.*, Gutugád and Bhujkoti. They should be present on that date in the forest and accompany the ranger when he marks their trees. In this way all the free-grant trees in the Deobán range could probably be marked in a fortnight.

A small wooden chauki at Lokandi láni would be useful for checking the export of free grantees' timber from the forests of the Lokandi Circle.

A fine of two annas apiece is to be levied on all scantling shewn out with the axe.

185. (2) *Fuel.*— Requires no regulation for the present.

186. (3) *Grazing.*—The present arrangements will probably only require some slight modifications during the next twenty years. The isolated Raura block of 106 acres, which it is proposed to work regularly every year to supply the rifle range with fuel, will have to be closed or fuel supplied from elsewhere at much greater expense. Grass-cutting, however, can be permitted, and as the rest of the khat is all burnt this block should form a most valuable fodder reserve for the use of the villagers. The portion below the path from Raura to Mairawána, or about ten acres, and which contains chiefly young chír, may however be left open, as it need not be worked, and it is inexpedient to close the path which is much used, but if it be found necessary a wire-fence will have to be run along its upper side to prevent cattle straying.

It will also be expedient to close the small area of karshu oak forest in the Pandáwa block which is to supply fuel for lime-burning and the 46 acres of Hajáwa 8, which it is proposed to coppice, as this system is quite incompatible with grazing, at least in the younger stages of the coppice growth. These two pieces adjoin each other and the nearest village, Khatwa is three miles away and more than two thousand feet below them. It is essential to define the limits between the open and closed areas and cut grazing paths two feet broad will have to be dug around the lower boundary of both pieces; in the case of Pandawa the newly cut level line might be used in places, and in Hajáwa 8 the fuel path leading to the Gedí khad would form the boundary for a part of the distance.

If the Kálsi forest be treated on the coppice with standard system (as proposed in para. 169) it will be necessary to alternately close and open the different compartments coppiced, not more than 270 acres, or less than one-seventh of the whole forest area near Kálsi being closed at a time. As soon therefore as these 270 acres are closed the 80 acres now closed in Barabágh should be reopened and only closed again when its turn for coppicing arrives.

The proposals therefore are to close (1) 100 acres of bán oak forest at Raura; (2) 120 acres of karshu oak forest near Pandáwa; (3) 270 acres at Kálsi as explained in para. 169, and it may also be necessary to close a portion of Bándla if the coppicing operations now carried on at Kurwa are extended to that block. These proposals are very moderate and should be considered quite apart from each other, as they affect the privileges of separate khats, Pandáwa being 15 miles from Raura and Raura 27 miles from Kálsi.

On the other hand certain areas of rocky grass—land blank or containing only a few scattered old trees, which it would be fruitless to protect, may be set aside as grazing grounds and allowed to be burnt annually. Such are—

		Acres.
Inári 1		132
Maráuwa 2		168
Dárna 4		259
Ekra 8		62
Kulered 4		59
Amlákri 3		177
Legúna 1		97
Duliána 4		448
	Total ...	1,402

One of the grazing boards in the Kanjátra block is wrongly placed, so that whereas the whole block should be closed to grazing, that portion between the Durani dhár and the Marauwa gád is now grazed over. This should be rectified immediately and the board placed on the Durání dhár.

The eastern boundary of the closed area in Kopti is not well defined for a portion of its length, and a wire-fence will be necessary to check illicit grazing, whilst a fence is also required for the same purpose in places along the Jádi road in the Matkangra block.

G. O. No. $\frac{4465}{610\text{-}9}$, dated 1st September, 1887, sanctioned a limit being put to the number of cattle entitled to free grazing, and fixed it at 10 per cent. on the actual number of each kind at present found in each khat. The numbers that actually graze in the forest are given in Appendix J., and it is proposed to add 10 per cent. to these and not to include a large number of goats, &c., which never enter Government forests, and whose owners do not even claim the right to graze in these forests. The villages who do not and never have exercised their grazing rights are mostly situated in the lower khats along the Jumna and the Tons far away from Government forests, and as the number of animals entitled to free grazing is now to be definitely and permanently fixed, it would seem impolitic to overburden the forests with unnecessary privileges, and the Conservator might ask the Local Government to sanction the exclusion of such cattle, sheep, and goats as never graze in the forests from the list of those entitled to free grazing and to have the Wajib-ul-arz modified accordingly. It may be mentioned that if all the animals entitled to free grazing according to the present Wajib-ul-arz in some of the outlying forests were to fully exercise their privileges, there would be scarcely standing room for them and the forests, as such, would be worthless.

187. (4) *Lopping.*—The rules must be more strictly enforced and at the end of the winter, which is the chief lopping season, the range officer should visit all the chief oak forests which are most likely to suffer, *viz.*, Singori, Kua, Raura, Kota, Bandla, Dárna, Jádi, Kutniár, Ekra 2 and Kulered 3. In case of persistent disregard of the rules the divisional officer should withdraw his permission to lop in the ill-treated forests, as a punishment and as a means of allowing the trees to recover, or he might fix a lopping rotation of three years for any given forest, opening and closing a compartment a year, which is the only possible way of enforcing rule No. 3 as given in paragraph 30. In these old oaks it is often difficult to determine which is the leading shoot, as it frequently happens that one shoot is left as the leader one year, but is cut down the next and another left. The rule should therefore run : " The leading shoot shall not be lopped and no branch cut within four feet of the top of the tree."

The special rules for Kalsi are mentioned in paragraph 171.

The villagers of Lohari, khat Dhanau, are anxious to obtain permission to lop the oaks in Bodiár, and as these are rather too remote from Chakráta to be of great value as fuel, they might be allowed to do so, as soon as the ranger reports that the lopping rules have been duly observed in the II. class forests of their khat, and

on the distinct understanding that the permission will be at once withdrawn in case the rules are again disregarded.

188. (5) *Removing dead leaves.*—It would be extremely difficult to check the number of "kandis" full of dead leaves removed from a forest, besides giving the forest guard an opportunity for oppression. The best plan, therefore, at Kurwa (*vide* paragraph 31) would be to adopt the second alternative and to open a portion of the forest annually for this purpose.

189. Privileges 6, 7, and 8 (paragraphs 21, 23) require no regulation.

190. (9) *Cultivation.*—Most of this has been demarcated, and no permission should be given to break up fresh land either in the I. class or in the closed II. class forests or in any of the deodár areas, but applicants might be allowed on payment of rent to the Forest Department to break up any grassy blanks in the open II. class forests which contain no forest growth, will not be planted up, and are not likely to get stocked with natural seedlings, but no clearances of forest growth should on any account be allowed.

The following cases in connection with the demarcation of the chaks are still outstanding, or the exchanges have not yet been reported to the Superintendent of the Dún.

Kálsi forest.—In 1871 compensation was paid for fields Nos. 2584—2586 covered with mango trees, and also for Nos. 2531—35. A chak of 18 acres, Beyaski, No. IV., has been given half to Sunker Das and half to Lachman Das, both of Haripúr, in exchange for the following fields.—

	A.	r.	p.
No. 737, Jokla	2	2	16
Nos. 2536, 3570-73	7	1	7
Total ...	9	3	23

This exchange was made by Mr. Bagshawe, but the chak has only now been demarcated. The Jumna river has cut away a lot of land including pillar No. 3, and all the land between pillars 3 and 4. It is useless to put up another pillar near the river, as it would be washed away in the rains. Between pillar No. 1 and the bridge there is some land of doubtful ownership claimed by Lachman Das and which he may be allowed to cultivate.

The only assessed land in the Kálsi forest not demarcated is field No. 373 containing 1 acre 1 rood 38 poles and called Thunard; it is situated in the Moila block.

Dhanau khat.—At Syáru, chak No. XXII in Jádi 6, it was necessary to exclude a tiny field, No. 415, containing 4 poles, as it was the only patch of cultivation on the far side of the khad which was taken as the boundary of the chak. Compensation should be paid to the owner, Gopaloo of Bangár.

In the closed II. class forest of Kanjátra there are numerous patches of cultivation scattered amongst the forest growth belonging to the people of Jádi; they are recorded in the settlement papers as follows:—

	A.	r.	p.
Kabátra Nos. 1 to 158	5	2	11
Baradhár „ 159 „ 173	1	3	13
Jhalkúri „ 174 „ 198	1	1	7
Total ...	8	2	31

As the demarcation of these patches would have involved the sacrifice of some valuable forest close to Chakráta, the villagers were offered in exchange double the quantity of land in open II. class forest or compensation in money, as well as a

deodár tree to each cultivator. They have accepted these very liberal terms, taking partly money and partly land as follows :—

Name of owner according to the changes, recorded by patwári.	*Land exchanged for*						Locality where new land has been given.
	Money.			Fields elsewhere.			
	A.	r.	p.	A.	r.	p.	
Mony	0	1	4	0	0	0	
Bidya	0	0	29	0	0	20	}
Patram	0	0	13	0	0	14	
Natha	0	3	4	0	1	2	} Chak No. XXVI., Kawai in Darna, given in exchange.
Juny	0	0	31	0	0	8	
Kima	1	1	0	0	3	20	}
Jindu	0	1	35	0	1	9	} Some fields in chaks Nos. XXI. and XXX., and Donda Duráni, given in exchange.
Harku	0	1	30	0	1	0	
Chandu	0	1	20	0	1	0	Some fields at Duráni, chak No. XXX.
Ramchand	0	2	17	0	0	0	
Ranjit	0	3	32	0	0	0	
Dilya	0	1	26	0	0	0	
Shamlát	0	1	15	0	0	0	
Total ...	6	1	23	2	1	8	

The cultivators should be put in the possession of their new fields, compensation paid to those who have accepted money, and a deodár tree from Kanjátra given to each of them, Mony having already received his. The Aughánis are accustomed to graze their mules and ponies on Duráni dhár and they allow their animals to graze all over the fields. They must either be prohibited altogether from grazing there or the cultivation must be fenced by the Forest Department, as I have promised the Jádi villages that one of these two courses will be taken. The fields in Kanjátra should not be closed until all this has been carried out. The agreement signed by the villagers is filed in the Jaunsár Forest Office.

Missau khal.—Fields Nos. 37, 38, and 39 above the fire line in Maráuwa 2 and close to chak No. XIX., Auna khera, have been acquired for two deodár trees which have been given to the owner, he being also allowed to do what he pleases with the trees included in the Auna chak.

The villagers of Masshak have been offered the two chaks of Ghatawa and Nakhiár, Nos. XIII. and XIV., consisting of rice fields in the Chátri block along the Masshak gád and which they now illegally cultivate, on the condition that they give up the following small scattered plots, all of which are fallow, except Nos. 1588 and 1589, and all being in the middle of good deodár and kail reproduction in the Missau block.

Name of owner.	No. of fields in khásra.	Area.	Name of cultivation.	Remarks.
		A. r. p.		
Maru	1587	0 0 7	Aunidhár or Patwa.	
Gulabu	1588—89	0 1 15	"	
Lalu	1590—92	0 0 18	"	
Saunoo	1266	0 0 21	Daboka.	
Nanoo	1087—94	0 0 28	Suriána.	
Ranjit	1593—96	0 0 30	Labli.	
Poona	1597	0 0 16	Bado.	
Jobu	1598—1601	0 0 28	"	
Manu	1473—81	0 1 36	Simai.	
Keolu	1482—95	0 1 24	"	

They have agreed to this, and their signatures are filed in the Jaunsar office. No other undemarcated and assessed cultivation exists in the Missau block, but in Kopti 3 and 4, Marauwa 1 and Chátri 1 there are several small patches which it has been impossible to demarcate without sacrificing valuable deodár forest. A complete list of such patches is given in Appendix L., and if possible they should be

acquired from the villagers by purchase or exchange. Some of them have lain fallow for many years, sometimes for as long as 15 years, and are now covered with fine deodár saplings ; such are Nos. 378—382 and Nos. 485 and 486 ; these should not be broken up again, but acquired, if it cannot be otherwise arranged, by means of the Land Acquisition Act, although it is not anticipated that there will be any necessity to resort to this.

The siyána of Mangtár says that no compensation was ever paid for the following fields which are in the I. class forest of Kanásar and were taken up at the time the forests were first demarcated. He is probably mistaken, but enquiries might be made from the Superintendent of the Dún.

			A.	r.	p.
Silgúr, Nos 374 375 and 377, owner Hariya	...	...	0	1	8
„ 383 „ Setuwa	...	...	0	0	24
Total		...	0	1	32

The Koti siyána also makes similar claims about some fields close to the forest guard's chauki at Kanásar, but compensation was doubtless paid.

Kailo khat.—In Legúna 2 amongst the deodár and kail there are several fields which have lain fallow for years called Obri and Thuwa. The villagers to whom they belong expressed their willingness either to exchange them for other land outside the fire line in Karáli 4 or to receive money compensation. The following arrangements have been made.

Nos. 247—249, and 270 of Obri and Nos. 2200, 2201, 2211, 2212, 2215 and 2216 of Thuwa, aggregating 1 acre 2 roods 18 poles and belonging to the Konain sanjayat have been exchanged for unassessed land included in chak No. LXXI Gajrár, whilst for Nos. 256, 258, 259 and 268 of Obri, containing 1 acre 1 rood 14 poles, Dharam Sing of Konain, has been given chak No. LXXII, Kaner, and for Nos. 2235 to 2243 of Thuwa and Nos. 722—727 at Tounra, containing 3 roods 6 poles, Kalwa (Dálam in khásra) has received chak No. LXXII, Gaura. There remain the following fields, for which compensation in money will have to be given, which the villagers have agreed to accept at the rate of compensation formerly paid for fields in Bodiar. The owners' signatures are filed in the Jaunsar Forest Office.

Locality.	Number of plots in khásra.	Area.			Owner.	
		a.	r.	p		
Obri ...	250, 252	0	1	25	Hari Nand of Konain ..	In Legúna 2.
„ ...	253—255, 261	1	0	35	Him Chand (now Beer Sing)	
„ ...	257, 260, 262—267	1	2	16	Cuni	
Thuwa ...	2196—2199, 2214	0	2	6	Jogi	„
„ ...	2202—2210	0	3	0	Dáona	
„ ...	2217, 2219,—2228	0	2	10	Kaimal	
„ ...	2218, 2229—2234	0	2	13	Dilya	
Bhartai ...	978—980	0	2	7	...	In Karáli 2.
	Total ...	6	0	32		

The Konain siyána says that compensation was never given for fields at Barai, Nos. 347—349, 3 roods 28 poles, included in the I. class forest, but he is probably mistaken, although enquiries might be made from the Superintendent of the Dún.

The following fields are above the path from Konain which forms such a good boundary to the Konain chak and they should be exchanged if possible for other land in Karáli 4 :—

			A.	r.	p.	
Nos. 215 to 221	...	...	0	3	8,	owner, Man Sing of Konain
„ 222 to 224	...	...	0	0	29	„ Dugal „

Mohna khat.—All fields in the Mohna block were purchased by Mr. Bagshawe, with the exception of those to the east of the Agár gád. The boundary has now been changed, the gád forming the new boundary from new pillar 13 down to the lower Mohna road, thus excluding the following fields:—

	A.	r.	p.
Chopka, Nos. 1785—1835 = ...	1	0	0
Kaunti (part of) 1853—1860 = ...	0	0	28

but Nos. 1836—1848, 30 poles, which are at the junction of the Chopka gadera and Agár gád, will have to be purchased in order to retain a good natural boundary. The owners are Mohna and Jita of Kandár.

Bamtar khat.—The outer forest boundary in Matkángra 1 and 3 has been changed, thus excluding a number of fields as well as a good deal of rocky grass land. Fields Nos. 57 to 75, containing 1 rood 14 poles, remain within the new boundary and have been relinquished by their owner, whilst a piece of zamíndári jungle lying between Cantonment and forest land has been included in the Matkángra block. An agreement about this, signed by the parties interested, is filed in the Jaunsár Forest Office.

With the exceptions noted above all assessed cultivation in the Deoban range has been demarcated and formed into chaks.

Measurement of growing oaks.

191. The measurements should be made regularly once a year in the sample plot of karshu in Jádi 9, but the present sample plots of moru and bán should be abandoned as being unsuitable for the purpose, *vide* para. 118, and fresh ones chosen of one acre in extent: that for bán in one of the closed Cantonment blocks, that for moru in Matkángra 2. The practice of giving the results of the measurement of 12 average trees in the annual report should be discontinued as useless, and either the average increment for each diameter class recorded, or simply a note made to the effect that the plots were measured on a certain date and the measurements entered in the Forest Journal.

Counting concentric rings in conifers.

192. This should be continued for deodár, rai, and morinda, some kail also being counted when possible, as up to date no ring countings have been made to show the rate of growth of this species, probably the fastest growing conifer in the range. The record should be kept by compartments and both the aspect and altitude should be invariably noted. The rings of at least fifty trees in each block should be counted at the time when the fellings take place, and all irregularly shaped trees should be rejected, as it is not easy in such cases to choose a mean radius, whilst any trees which seem to have been suppressed should bear a special mark to distinguish them from the others. The record should be kept in the Forest Journal in a similar form to that of Appendix P. with the addition of a column for altitudes.

Reducing factor.

193. The reducing factor for spruce and silver fir seems to have been fairly well determined for I. and II. class trees, and no further measurements need be made; but it is necessary to find out the reducing factors of the three oaks, and as a considerable number of III. class trees are felled in addition to the larger ones, trees of each species and of each of the three diameter classes 12″—18,″ 18″—24″ and over 24″ should be selected and their mean reducing factor determined according to the method given in para. 119.

Maintenance of Records.

194. Skeleton maps of the different working circles should be prepared and at the end of each year the area over which selection or other fellings have been made should be shown by means of different colors and the quantity of produce removed written down in a column at the side. Most of the compartments are well defined by

natural features. I consider also that skeleton maps showing the boundaries, the chaks, all pillars, the divisions into blocks and compartments, the principal roads, &c., with names in the vernacular but numbers in English, should be prepared for the use of foresters and forest guards, and the former should be held responsible that their guards are acquainted with the proper boundaries of the blocks and compartments in their beats. Both foresters and guards are often ignorant of the divisions which have been formed, and in their reports frequently mention local names which are unknown to the divisional officer, thus rendering the maintenance of proper records impossible. All guards should be expected to know English numbers, since the pillars, stacks of fuel, and so forth are all numbered in English.

In fuel fellings trees of very various sizes are cut, this being especially the case with oaks owing to the number of unsound ones of all classes. It is therefore useless, not to say misleading, simply to give the total number of trees felled as in para. 48 of the annual report for 1887, but a record should be carefully kept of the number of trees of the different diameter classes cut down, distinguishing between the sound and the unsound as has been done in the enumeration survey, *vide* Appendix A.

Hitherto coppicing has only been carried on at Kurwa, and it seems to have been the custom to count all the trees felled and enter them as thinnings, *vide* the para. referred to above. This is useless and involves a great deal of unnecessary trouble. What should be recorded in coppice operations is simply the number of acres coppiced and the number of standards left of different diameter classes with the names of the species.

The outturn of the trees given free to villagers not being ascertainable, it becomes necessary to adopt arbitrary figures for the returns which have to be made. Those now in use and which may continue to be employed are as under :—

	Number of cubic feet per tree.	Value.	
		Rs. a. p.	
Deodar	100	20 0 0	
Kail	80	4 0 0	
Chir	80	4 0 0	
Rai and morinda	80	3 0 0	
Oak	30	2 0 0	
Shisham	25	2 8 0	
Sál	5	2 8 0	The sál at Kálsi are very small.
Saiu	5	2 8 0	
Kokát and others	5	2 0 0	
Tors, kurwas, ballis, posts, planks, pieces, &c.	1	0 4 0	
Bamboos, per score	...	0 4 0	
Ringáls, per hundred	...	0 1 0	

Plantation Journals.—The record of sowing and planting operations should now be kept compartment by compartment, several pages being devoted to each of the compartments which have to be treated.

Revision of agreements.—The agreement with the Commissariat requires modification. Para. 6 should be altered and all wood should be made over by measurement only, the unit being 100 stacked cubic feet. It is not reasonable to expect the Forest Department to make good any deficiencies in weight which may occur months after the fuel has left its charge, and as the weight of fuel is not a constant quantity the only measure is the cubic foot.

The agreement with the fuel-carrying contractors should be changed to provide for the fuel being carried down the sledge road and in order to carry out the proposal in para. 182, Kurwa should be excluded from their contract. It would also be as well to insert a clause to the effect that these contractors should be obliged to furnish mules for the carriage of baggage when required to do so by the divisional officer.

In the Kálsi lease only the lopping of badly-grown unsound bákli should be allo ed and not of good timber trees of that species.

Summary of Works.

It may be useful to recapitulate here in a tabular form the chief works which will have to be carried out every year.

		Months.
1	Marking oak and fir for fuel in the Deoban Circle (selection fellings) ...	April, May.
2	„ oak for fuel at Raura	„ „
3	„ trees for fuel in Lokandi Circle (improvement fellings) ...	„ „
4	„ deodar in Karámba Circle for following year's supply (selection felling).	November.
5	„ rai „ „ Bhujkoti „ „ „ ...	„
6	„ trees for free grantees in the upper forests	April, May.
7	„ trees for standards and dressing stumps of those felled in karcha coppice.	November.
8	„ „ „ „ bán coppice ...	December, January.
9	„ „ „ „ Kálsi „ ...	January, February.
0	„ trees for free grantees at Kálsi	„ „
11	„ trees for Military Works at Pandáwa and Matkángra ...	As required.
12	Carriage of timber and fuel to Chakráta	May to December.
13	Work on deodár plantations, Lokandi and Karámba circles	July, November.
14	„ fuel „ Deoban Circle	July, August.
15	Making cleanings amongst young kail according to scheme in para. 177 ...	April, May, June.
16	Girdling firs, oaks, &c. ditto. ...	„ „ „
17	Constructing three or four miles of fuel and timber-carrying paths ...	„ „ „
18	Cutting outer boundary lines and repairing pillars	April to December.
19	Inspection of the oak forests to see whether the lopping rules have been observed.	March.
20	Measurements of oaks in the three sample plots	May, June.
21	Counting concentric rings in conifers	June, October
22	Annual repairs to roads and buildings	At all times.
	THE EXTRAORDINARY WORKS NOT OF ANNUAL OCCURRENCE WILL BE—	
1	Construction of sledge road from Deobán to Chakráta.	
2	Building rest houses at Kálsi und Konain.	
3	Completion of the demarcation of chaks.	
4	Determining reducing factor for three oaks.	

CHAPTER X.

E.—*Financial Prospects.*

196. Although from the limited and uncertain nature of the demands for forest produce it is impossible to form anything approaching to an accurate estimate of the probable annual surplus, yet it will be useful to give a rough estimate, based chiefly on past management, of the anticipated revenue and expenditure :—

Budget sub-heads.	Receipts.	Rs.	Rs.
Ia ...	5,000 cubic feet of deodár, at an average rate of Re 1-8 per cubic foot ...	7,500	
	1,500 „ rai, at Re. 1 per cubic foot	1,500	
	Miscellaneous sales	200	
			9,200
Ib .	40,000 stacked cubic feet of oak for Commissariat, at Rs. 25 per cent. ...	10,000	
	80,000 „ „ fir „ Rs. 19 „ ...	15,200	
	9,000 „ „ oak for residents, Chakrata, Rs 11 „ ...	990	
	6,000 „ „ burans, &c., „ Rs. 8 „ ...	480	
	5,000 fagots for „ at 3 annas each .	937	
	3,000 cubic feet of charcoal „ at 4 annas per foot,	750	
	1,200 stacked cubic feet of fuel for the Brewery, at Rs. 10 per cent. ...	120	
	3,000 „ „ for Military Works, Kurwa, at Rs 10 per cent.,	300	
	3,000 „ „ „ „ Matkángra „	300	
	5,000 „ „ „ „ Pandáwa at Rs. 5 per cent.,	500	
	1,000 cubic feet of charcoal for Brewery, at 3 annas per cubic foot ...	187	
			29,764
IIb ...	Share of Kálsi lease	250	
	Sale of 54 acres of stored coppice, at Rs. 20 per acre	1,080	
	Miscellaneous	70	
			1,800
IIc ...	Share of Kálsi lease	20	
	Sale of ringals by auction	200	
			220
IId ...	Dues from Commissariat for grazing cattle at Kalsi	180	
	Grazing dues from fuel contractors	200	
	200 bullocks, at 4 annas each	50	
	2,000 sheep and goats, at 1, anna each	125	
	Gujars' buffaloes	100	
	Miscellaneous	45	
			700
IIe ...	Share of Kalsi lease	300	
	Sales from forest garden	500	800
	Total	...	41,984

Budget sub-heads.	Expenditure.	Rs.	Rs.
AIa ...	Preparing and carrying 5,000 cubic feet of deodár to Chakráta, at 9 annas per cubic foot	2,812	
	Preparing and carrying 1,500 cubic feet of rai to Chakráta, at 8 annas per cubic foot.	750	
	Miscellaneous charges	138	
AIb ...	Cutting and stacking 40,000 stacked cubic feet of oak, at Rs 2 per cent ...	800	3,700
	,, 80,000 ,, Re 1-12 ,,	1,400	
	Carrying 40,000 cubic feet of oak 4 miles, at Re. 1-6 per mile ,,	2,200	
	,, 80,000 ,, 6r 4 ,, Re 1-2 ,, ,,	3,600	
	Stacking 120,000 cubic feet at head of slide, at 2½ annas per cent. ...	188	
	Carrying 41,666 maunds of fuel by sledge road 3½ miles, at 3 as per maund per mile.	2,046	
	Re-stacking 120,000 cubic feet in shed, at 3 annas per cent.	225	
	Cutting, carrying and stacking 15,000 cubic feet of fuel for the residents of Chakráta at Rs 4-2-6 per cent.	925	
	Preparing and delivering 4,200 stacked cubic feet of fuel at Kurwa, at Rs. 4 per cent.	168	
	,, ,, 5,000 ,, Pandáwa at Re. 4 per cent.	200	
	,, ,, 3,000 ,, Matkángra ,, ...	120	
	,, ,, 3,000 cubic feet of charcoal at depôt, at 3 annas, per foot.	187	
	,, ,, 1,000 ,, ,, Kurwa, at 2 annas per foot,	375	
	Preparing and delivering 5,000 fagots, at 2 annas each	625	
AV ...	Rent of Cantonment blocks	504	12,757
AVIa ...	Purchase of stores, tools, &c	200	500
AVIIa ...	Annual repairs to roads	500	200
	Contructing and metalling three miles of fuel path, at Rs 200 per mile ...	600	
	Making a quarter of a mile of timber-carrying paths, at Rs. 60 per mile ...	15	
AVIIb ...	Annual repairs	800	1,115
	New forest rest-house at Konain ... . Rs 2,500	...	
	Room for forest ranger at Kálai chauki ... .. ,, 170	...	
	Three forest guards' chaukis, at Rs. 150 each .. ... ,, 450	...	
	Small wooden check chauki at Lokandilani ... ... ,, 80	...	
	3,200		
	One-twentieth part of the above	160	
AVIIIa ...	Repairs to boundary and chak pillars	100	960
	Clearing boundary lines	100	
	Cutting 3½ miles of a two foot line round the outer boundary, at Rs. 50 per mile	210	
AVIIId ...	Forming 44 acres of new plantations and maintaining old ones ...	880	410
	Planting in Cantonments	200	
AVIIIe ...	Clearing and burning fire lines	300	1,080
	Two fire guards, at Rs 5 per month for 7 months	70	
	Miscellaneous	30	
AVIIIf ...	Cleanings amongst young kail, 45 acres, at Re. 1 per acre	45	400
	Girdlings firs, oaks, &c., over 130 acres, at 12 annas per acre	98	
	Wire-fencing to protect against grazing	57	
	Maintenance of Chakráta Forest Garden	700	
AIXc ..	Miscellaneous items	300	900
			300
	Total, Expenditure		22,322
B Ia, *b, and d*, B II *a, b & d*	One-third average divisional and two-fifteenths of average direction charges for the five years up to 1886-87.	11,343	11,343
BIIc ...	Permanent establishment	230	230
BIII ...	... ...	600	600
	Total B. ...	...	12,173
	Total, A and B. ...	...	34,495
	Surplus ...	...	7,489
	Grand Total ..	...	41,984

Dehra:
10*th July*, 1888.

(Sd) N HEARLE,
Deputy Conservator of Forests.

APPENDICES.

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartment.	DEODÁR.										Total.
		3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Inári ...	1	5	15	8	2	6	2	5	7	...	...	50
	2	528	378	67	3	9	8	12	4	...	...	1,009
	3	4	5	6	...	...	...	...	.	...	..	15
	4	1	2	1	1	1	1	1	...	...	...	8
	5	14	29	4	...	1	...	2	...	...	...	50
Total ...	...	552	429	86	6	17	11	20	11	...	...	1,132
Bodiár ...	1	13,865	10,159	2,349	20	932	14	834	30	5	...	28,208
	2	6,357	3,720	909	7	326	6	316	8	...	...	11,649
	3	2,572	2,726	620	7	219	8	302	12	9	...	6,475
	4	5,782	5,382	992	23	208	22	324	15	10	2	12,820
	5	11,882	6,013	1,058	12	550	12	292	6	6	4	19,835
	6	1,609	892	80	1	52	...	83	1	1	...	2,719
	7	4,266	1,855	300	14	190	11	288	7	5	2	6,918
Total ...	...	46,333	30,747	6,308	84	2,537	73	2,419	79	36	8	88,624
Moila ...	1	529	401	106	2	20	...	13	1	2	1	1,084
	2	1,680	922	272	10	70	12	64	8	31	11	3,289
	3	1,523	607	154	15	58	9	18	13	2	1	2,490
	4	181	168	85	4	3	1	21	3	1	3	470
	5	3,133	1,527	431	10	293	9	185	26	1	1	5,616
	6	133	127	96	4	21	...	14	5	1	...	401
	7	7	4	2	...	...	...	...	...	...	...	13
	8	318	142	78	10	30	5	42	10	...	...	635
	9	405	233	108	10	27	9	56	20	1	...	929
Total ...	...	8,118	4,221	1,392	65	531	45	413	86	39	17	14,027
Missau ...	1	6,490	2,957	1,171	21	717	26	1,179	72	6	2	12,641
	2	10,152	4,481	2,049	28	1,274	37	1,461	114	18	2	19,616
	3	7,228	4,480	1,842	41	1,100	60	1,100	114	1	...	15,966
	4	4,026	1,904	684	10	471	11	500	13	...	...	7,619
	5	1,372	1,856	756	7	433	14	786	22	1	...	5,247
	6	1,449	850	247	4	179	15	415	33	1	.	3,193
	7	472	318	76	...	49	1	152	2	1	...	1,071
Total ...	...	31,189	16,846	6,825	111	4,223	164	5,593	370	28	4	65,353
Chátri ...	1	4,801	1,092	451	...	296	1	789	6	...	5	7,841
	2	14	8	5	2	5	...	5	...	..	...	39
	3	3,223	2,037	515	3	131	5	238	...	...	2	6,154
Total ...	...	2,538	4,037	971	5	432	6	1,032	6	...	7	14,034
Kanásar ...	...	14,178	5,831	1,363	15	564	11	758	45	17	2	22,784
Kopti ...	1	806	597	174	3	121	2	142	6	1	...	1,852
	2	2,195	871	224	8	129	11	259	25	4	...	3,726
	3	2,304	1,231	313	...	76	1	82	...	3	...	4,010
	4	1,646	834	223	4	107	6	110	3	3	1	2,937
Total ...	..	6,951	3,533	934	15	433	20	593	34	11	1	12,525

BENGAL SECRETARIAT LIBRARY.

DIX A.

COMPARTMENTS.

classes.)

KAIL.

3"—6".	6"—12".	12"—18".		18"—24".		ABOVE 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
2	.	1	...	...	..	...	...	...	..	3
29	17	6	..	..	..	...	...	...	...	52
2	...	..	...	...	...	...	...	...	...	2
...	...	...	...	..	...	...	...	...	...	...
8	3	2	...	...	..	...	...	...	...	13
41	20	9	...	..	...	...	...	...	...	70
469	115	10	...	...	...	...	...	...	...	594
129	26	1	...	...	..	...	.	...	...	156
341	72	6	...	1	...	2	..	...	...	422
109	48	5	...	2	...	..	...	...	...	164
475	100	6	...	...	..	...	...	...	...	581
55	37	..	...	...	...	...	...	...	...	92
377	149	2	..	...	..	...	...	...	...	528
1,955	547	30	...	3	...	2	...	...	...	2,537
970	680	210	8	34	4	15	3	22	11	1,957
279	185	130	4	25	1	11		3	...	638
549	449	105	5	39	3	15	4	20	4	1,193
87	64	13	1	7	1	2		...	..	180
623	367	149	8	81	9	32	10	...	1	1,280
2,417	563	179	5	26	2	9	2	1	.	3,204
504	525	240	6	18	...	3	...	...	1	1,387
1,134	524	361	12	103	9	45	9	4	2	2,203
3,585	1,810	1,230	37	378	41	248	59	13	5	7,415
10,238	5,167	2,631	86	711	70	380	87	63	24	19,457
1,866	924	380	17	291	38	376	79	6	2	3,979
3,573	1,886	868	26	491	57	534	109	25	6	7,575
2,305	820	443	31	306	39	231	82	2	1	4,260
2,960	267	169	4	143	5	157	15	3	...	3,723
507	1,170	552	4	289	9	326	15	2	...	2,865
553	374	131	8	65	4	158	19	.		1,312
248	205	120	3	46	...	96	10	1		729
12,012	5,646	2,663	93	1,622	152	1,878	329	39	9	24,443
241	416	275	6	137	6	79	5	..	1	1,166
1	9	13	1	6	1	2	1		...	34
494	352	61	1	28	3	37	11			982
736	777	349	8	166	10	118	17	...	1	2,182
11,519	2,446	591	18	122	6	91	30	8	4	14,835
182	131	73	3	36	1	30	5	2		463
424	141	53	4	51	3	32	14	1	...	723
1,128	140	63	2	38	2	7	.		...	1,380
1,445	436	107	1	54	4	36	5	.		2,088
3,179	848	296	10	179	10	105	24	3	...	4,654

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments	CHÍR. 3"—0"	6"—12".	12"—18". Sound.	12"—18". Unsound	18"—24". Sound	18"—24". Unsound.	Above 24". Green. Sound.	Above 24". Green. Unsound.	Above 24". Dry. Sound.	Above 24". Dry. Unsound.	Total.
Kotha	..	...	1	..	...	...	...	...	...	..	...	1
Bándla ...	.	3	1		...	...	.			...		4
Kurwa .	1	...	1	...	...	...	...	...	...	...	...	1
	2	..	...	.	...	...	...	...	...	...		...
Total ..		...	1	..	..	.	.	...	...	...	...	1
Baura .	..	428	125	47	.	61	1	4	...	.		666
Inári ...	1	...	...	..	...	...	...	...	...	...	...	...
	2	..	...	...	..	...	...	...	...	...	...	..
	3	1	...	1	...	...	...	...	...	...	...	2
	4	...	..	.	...	...	...	...	...	...	...	...
	5	1	...	.	...	...	...	...	...	...	...	1
Total ...	...	2	...	1	...	..				.		3
Bodliár ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	1	...	...	...	...	...	...	...	...	...	1
	3	..	...	...	...	...	..	...	...	...	...	...
	4	..	...	...	...	...	...	...	...	...	...	...
	5	2	...	.	...	...	...	...	...	...	...	2
	6	.	...	...	...	...	...	...	...	...	...	...
	7	2	..	...	...	...	...	...	...	...	...	2
Total ...	...	5		...	..	...	..	.	...	...	...	5
Moila	1	.	...	...	...	...	...	...	...	...	...	...
	2	.	..	...	...	...	...	...	...	..	..	...
	3	.	..	..	...	...	...	...	...	...	...	...
	4		..	...	...	...	...	..	...	...	...	...
	5	1	..	...	...	...	...	...	...	..	...	1
	6			...	...	...	...	...	...	...	...	..
	7	3	2	...	...	...	...	...	...	...	...	5
	8	3	2	2	...	...	2	...	...	...	...	9
	9	.	1	...	..	...	...	...	...	...	...	1
Total ...	...	7	5	2	...	2	...		...	...	...	11
Missau	1	..	.	...	...	...	.	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4			...	...	..	...	...	...	...	..	...
	5	15	21	12	...	17		18	...	1	...	84
	6	30	83	55	...	24	1	39	...	...	...	241
	7	31	80	46	...	26	...	70	...	1	...	254
Total ...	...	85	184	113		67	1	127		2	..	579
Chátri ..	1	273	488	426	4	458	4	442	...	...	...	2,095
	2	735	1,171	1,189	9	771	8	892	...	7	...	4,782
	3	172	232	69	2	19	2	56	...	...	...	552
Total ...	...	1,180	1,891	1,684	15	1,248	14	1,390	...	7	...	7,429
Kanéear ...	...	38	14	1	...	1	...	...	...	...	...	54
Kopti ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	..
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	...	...	...	...	...	...

DIX A.

COMPARTMENTS.

Classes)—, continued).

RAI.

3"—6".	5"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
...	...	...	...	...	...	...	...	...	...	.
..	..	..	...	...	...	...	..	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	..	...	...	...	...	...	..	...	...	...
..	...	..	...	...	..	..	.		..	.
...	...	...	...	...	...	...	.		...	..
12	20	4	2	14	2	9	6	...	1	70
426	320	114	13	63	28	61	30	1	2	1,064
1	...	...	...	...	..	.	...	...	...	1
8	22	6	1	3	1	...	...	...	...	41
156	173	53	11	15	11	12	18	...	...	449
603	541	177	27	95	42	82	54	1	3	1,625
3,569	2,810	1,033	30	754	40	912	73	21	2	9,244
2,034	1,896	808	30	555	32	710	78	6	1	6,150
401	227	84	6	46	5	89	21	3	.	882
1,310	936	283	13	365	15	423	64	11	3	3,423
7,946	3,255	1,088	56	1,086	59	1,086	62	14	9	1,466
3,292	1,323	371	11	260	12	436	33	4	...	5,742
3,451	717	250	11	185	15	287	17	8	2	4,943
22,003	11,164	3,917	157	3,251	178	3,943	348	67	17	45,045
3,387	2,373	1,372	47	521	53	571	146	156	143	8,769
1,907	1,126	479	16	240	27	178	48	93	50	4,224
2,412	1,162	569	17	276	24	458	68	66	128	5,180
1,625	768	742	21	416	32	320	72	143	94	4,233
5,343	2,821	1,170	91	964	84	876	257	90	5	11,201
4,200	908	386	12	207	20	225	49	12	2	6,021
554	254	98	9	80	4	103	25	2	1	1,130
1,380	434	220	12	92	8	123	48	11	5	2,333
2,449	936	442	43	176	28	143	51	9	1	4,278
23,317	10,282	5,478	268	2,972	280	2,997	764	582	429	47,369
2,449	1,183	408	19	284	35	327	78	15	2	4,800
3,398	2,186	974	37	737	65	782	169	26	1	8,325
3,943	2,278	1,052	33	648	51	608	104	6	2	8,725
1,927	1,256	610	27	446	38	406	102	7	..	4,909
197	98	59	1	45	1	81	28	..	.	510
1,484	1,013	329	4	241	12	381	82	4		3,550
112	58	43	...	29	1	79	4	4	1	331
13,510	8,022	3,475	121	2,430	203	2,754	567	62	6	31,150
3	1	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...
16	8	1	...	1	1	3	...	...	...	30
19	9	1	...	1	1	3	.	...	...	34
688	311	116	9	82	8	59	43	3	.	1,319
2,384	1,389	738	89	852	96	1,258	201	27	10	6,994
3,096	1,168	382	30	244	30	787	131	16	10	5,894
2,278	1,247	634	60	548	40	1,114	132	10	7	6,070
1,201	524	142	10	90	10	90	34	...	...	2,101
8,959	4,278	1,896	189	1,784	176	3,249	498	53	27	21,059

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartment.	DEODÁR.										Total.
		3″—6″.	6″—12″	12″—18″.		18″—24″.		Above 24″.				
								Green.		*Dry.*		
				Sound.	Unsound	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
Asmári	1	516	513	169	13	99	6	25	2	...	...	1,343
	2	1,985	1,722	518	16	320	13	234	22	1	...	4,831
	3	1,952	1,301	343	3	219	1	192	5	...	...	4,016
Total ...	..	4,453	3,536	1,030	32	638	20	451	29	1	...	10,190
Marauwa ...	1	8,050	1,765	489	4	103	7	152	31	3	3	10,607
	2	548	196	99	7	71	5	64	15	2	2	1,009
	3	72	26	22	4	1	1	8	1	...	...	135
	4	24	8	26	...	4	2	18	5	1	...	88
	5	24	30	10	...	2	...	4	1	1	...	72
Total ...	...	8,718	2,025	646	15	181	15	246	53	7	5	11,911
Thona .	1	36	63	7	...	3	...	1	...	...	...	110
	2	20	15	7	...	3	...	...	1	...	...	46
	3	1,309	852	185	3	60	3	88	4	...	1	2,505
	4	484	404	193	6	127	6	101	6	1	...	1,328
Total ...	...	1,009	1,334	392	9	193	9	190	11	1	1	4,049
Kutniár ...	1	13	25	6	...	1	...	...	1	...	...	46
	2	...	4	2	...	...	..	...	...	...	...	6
Total ..	...	13	29	8	...	1	...	...	1	...	...	52
Kanjátra ...	1	342	298	70	...	24	..	18	...	...	...	752
	2	93	76	41	2	27	...	12	...	...	...	251
	3	858	490	238	1	137	2	145	6	2	...	1,879
	4	826	480	122	10	84	5	86	2	2	...	1,567
	5	12	...	...	...	1	...	1	...	...	...	14
Total .	...	2,131	1,294	471	13	273	7	262	8	4	...	4,463
Jádi ...	1	23	50	19	...	5	..	1	...	...	...	98
	2	6	16	7	2	...	2	1	2	...	...	36
	3	2	4	2	...	...	...	...	...	...	...	8
	4	210	180	72	...	13	...	3	...	...	...	478
	5	68	43	14	1	1	...	1	...	4	..	132
	6	13	18	21	...	4	...	...	...	...	...	56
	7	38	33	10	...	...	...	...	...	...	...	81
	8	45	34	10	...	4	...	1	...	...	...	94
	9	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	405	378	155	3	27	2	7	2	4	...	983
Matkángra ...	1	...	...	...	...	...	...	...	...	...	..	...
	2	...	...	...	...	...	..	...	...	...	...	...
	3	..	...	...	...	...	...	.	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	..	..
	5	...	...	...	...	...	...	...	...	...	..	...
Total ...	..	...	...	...	...	...	...	...	...	...	...	...

DIX A.

COMPARTMENT.

classes)—(continued).

KAIL.

3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
234	95	9	...	...	...	...	...	...	...	338
416	240	69	9	49	7	81	9	...	...	880
379	181	42	13	17	2	23	2	...	...	659
1,029	516	120	22	66	9	104	11	...	...	1,877
3,923	511	168	5	56	4	88	30	3	2	4,795
1,221	137	78	7	59	5	69	17	5	...	1,598
52	50	26	2	18	...	20	3	1	...	172
45	25	102	...	58	1	118	4	1	1	355
84	160	176	1	33	2	31	3	6	7	503
5,324	883	550	15	224	12	326	68	16	10	7,423
45	5	...	...	...	...	...	...	...	...	50
94	50	3	1	...	...	...	...	...	...	148
4,504	371	121	4	61	6	45	3	...	...	5,115
1,481	290	154	7	98	14	91	17	2	3	2,157
6,124	716	278	12	159	20	136	20	2	3	7,470
121	90	14	2	...	...	...	...	...	...	233
43	15	...	...	...	...	...	...	...	...	58
164	111	14	2	...	...	...	...	...	...	291
1,074	234	43	3	18	...	5	...	...	...	2,277
272	150	42	2	23	3	15	2	2	..	511
1,462	185	74	2	77	2	59	1	...	..	1,862
7,671	972	168	18	96	12	75	17	2	4	9,035
189	65	13	...	...	...	...	...	...	...	217
11,518	1,606	340	25	214	17	154	20	4	4	13,902
5	7	2	...	...	...	...	...	...	...	14
4	7	1	...	...	...	...	...	...	...	12
5	1	1	...	...	...	...	...	...	...	7
73	34	2	...	..	...	...	...	..	...	109
344	60	5	1	1	...	...	...	1	1	413
51	25	1	...	...	...	...	...	...	...	77
46	7	1	...	...	...	...	...	...	...	54
9	...	...	...	...	.	...	...	...	...	9
48	18	...	...	...	..	...	...	...	...	66
585	159	13	1	1	...	...	...	1	1	761
...	1	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...
10	5	1	..	...	...	...	...	...	...	16
...	...	...	...	...	...	...	...	...	...	..
3	...	...	...	...	...	...	...	...	...	3
13	6	1	...	...	...	...	...	...	...	20

APPEN

CONTENTS OF

Diameter

Name of block.	Number of compartments.	CHÍR.										
		3″—6″.	6″—12′.	12″—18″.		18″—24″.		Above 24″.				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
Asmári ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	..	...	...
Total ...	...	...	...	...	...	...	...	...	...	..	...	...
Marauwa ...	1	30	20	...	...	...	...	4	...	...	...	54
	2	70	141	360	11	241	6	368	32	..	1	1,230
	3	50	33	26	2	33	2	62	7	...	...	215
	4	2	4	2	...	5	1	5	1	1	...	21
	5	2	...	...	...	...	...	...	..	...	...	2
Total ...	...	154	198	388	13	279	9	439	40	1	1	1,522
Thona ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	.
	3	...	...	...	...	...	...	...	...	...	...	.
	4	2	1	1	...	...	...	...	...	...	...	4
Total ...	...	2	1	1	...	...	...	...	...	...	...	4
Kutniár ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	..	...	...	...	...	...
Kanjátra ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	..	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	2	...	...	...	...	...	2
	5	..	...	...	...	..	..	. .	...	...	..	...
Total ...	...	...	...	...	...	2	...	...	...	.	...	2
Jádi ...	1	...	...	...	...	..	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	..	...	. .	...	...	...	.
	4	...	...	...	...	...	...	...	...	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	. .	...
	7	...	...	...	...	...	...	...	...	...	...	...
	8	...	...	...	...	...	...	...	...	...	...	...
	9	...	...	...	...	...	...	...	...	...	...	...
Total ..	...	...	...	..	...	.	...	..	...	...	.	
Darua ...	1	...	...	...	...	...	...	..	...	...	...	...
	2	...	...	...	...	..	...	...	...	...	...	...
	3	...	1	2	...	1	...	...	...	...	...	4
	4		Not valued.									
Total ...	...	...	1	2	...	1	...	...	...	...	...	4
Matkángra ...	1	...	...	...	...	...	...	...	...	...	..	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	...	...	...	...	...	...

DIX A.

COMPARTMENTS.

Classes)—(continued).

BAI.

3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
4,283	3,233	1,236	84	467	77	201	61	1	...	9,643
1,953	1,511	744	113	515	155	378	277	8	..	5,654
4,373	3,812	2,155	336	1,340	251	1,168	370	21	1	13,827
10,609	8,556	4,135	533	2,322	483	1,747	708	30	1	29,124
451	180	32	2	21	...	35	6	...	1	678
182	113	52	..	36	5	29	9	6	4	436
96	41	22	2	3	1	11	2			178
32	72	53	1	11	1	41	5	.	2	218
120	72	80	3	40	4	30	10	10	4	373
881	428	239	8	111	11	146	32	16	11	1,883
930	595	184	3	98	6	164	12	2	1	1,995
870	1,114	732	42	610	21	406	30	2	...	3,827
4,799	2,783	1,362	42	745	77	1,602	246	12	7	11,635
1,246	802	351	23	328	57	553	153	2	1	3,516
7,845	5,294	2,629	110	1,781	161	2,785	441	18	9	20,973
2,375	2,450	933	165	376	123	169	76	1	1	6,671
830	743	212	23	26	2	1	3	...	...	1,840
3,205	3,193	1,145	188	404	125	170	79	1	1	8,511
2,484	2,626	2,319	171	1,309	92	595	90	3	1	9,692
1,834	1,082	1,039	63	846	87	600	208	17	2	5,778
1,775	1,001	787	81	738	77	709	394	24	3	5,739
695	475	164	23	72	19	64	44	1		1,557
901	603	475	24	327	28	173	30	8	.	2,659
7,689	5,960	4,784	362	3,292	303	2,201	766	53	6	25,425
1,347	1,599	600	39	288	42	198	67	6	..	4,186
1,284	1,138	438	37	243	33	129	84	10	1	3,347
133	228	138	7	56	6	51	9	1	...	629
5,948	3,381	2,785	105	1,302	97	782	110	27	5	14,492
3,663	1,465	1,006	20	421	21	224	15	50	14	7,505
1,475	791	407	20	224	13	79	14	3	2	3,027
3,286	2,596	1,396	31	613	29	220	30	64	29	8,204
353	209	232	14	31	2	2	..	10	.	913
505	313	135	3	74	2	20	1	4	...	1,057
17,994	11,780	7,637	282	3,252	244	1,705	280	175	51	43,450
111	143	43	...	18	1	8	1	...	...	325
2	.	...	...	...	...	...	..	...	...	2
.	Not valued.	. .	...	. .	..	...	...	..	...	...
113	143	43		18	1	8	1	...	...	327
9	38	15	..	7	3	..	2	...	...	74
12	5	2	...	...			...	...	...	19
18	10	4	.	2	...	1	.	..	...	35
7	4	2		3	...	1	...	..	...	17
64	57	12	1	6	1	2	...	..	...	143
110	114	35	1	18	4	4	2	..	...	288

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	DEODÁR.										
		3"—5".	6"—12".	12"—18".		18"—24".		Above 24".				Total
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Mohna ...	1	...	...	...	...	...	...	...	...	...	...	..
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	1	1	...	...	1	...	...	...	...	...	3
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
	7	...	...	...	...	...	...	...	...	...	...	...
	8	1	...	...	...	...	...	...	...	...	...	1
	9	2	1	3	...	1	...	...	...	...	..	7
	10	30	31	5	...	3	...	2	...	...	...	71
	11	7	12	8	...	1	...	1	...	...	...	29
	12	237	213	94	...	42	1	40	1	...	...	628
	13	59	46	10	1	17	...	17	...	...	...	150
	14	55	80	32	...	12	...	10	1	...	...	190
Total ...	...	392	384	152	1	77	1	70	2	...	...	1,079
Durání ...	1	131	37	50	2	29	6	29	9	...	4	297
	2	176	69	53	1	23	4	35	12	...	...	373
	3	164	98	89	5	43	5	67	16	1	..	488
	4	125	65	38	5	27	8	41	16	3	...	328
	5	1,805	925	507	42	308	45	294	67	16	6	4,075
	6	301	151	143	8	51	5	45	18	...	...	722
Total ...	...	2,702	1,345	880	63	541	73	511	138	20	10	6,283
Ekra ...	1	1	1	...	...	...	...	...	...	...	...	2
	2	1	...	...	...	...	...	..	...	...	...	1
	3	...	...	...	...	...	...	...	...	...	...	...
	4	4	1	...	...	...	...	...	...	...	...	5
	5	158	94	25	...	5	...	...	...	...	...	282
	6	1	...	...	...	...	...	...	...	...	...	1
Total ...	...	165	96	25	...	5	...	...	...	...	..	291
Kulered ...	1	...	1	...	...	...	...	...	...	...	...	1
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
	5	1	...	...	...	...	...	...	...	...	...	1
	6	...	1	...	...	...	...	...	...	...	...	1
Total ...	...	1	2	...	...	...	...	...	...	...	...	3
Amlokri ...	1	1	...	...	...	...	...	...	...	...	..	1
	2	...	...	...	...	...	..	..	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	1	...	..	...	..	...	...	...	...	...	1
Dánda ...	1	108	90	38	...	3	...	2	..	...	1	242
	2	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	108	90	38	...	3	...	2	..	...	1	242
Hajáwa ...	1	425	187	34	2	8	2	...	...	...	...	658
	2	553	117	16	1	10	..	3	1	...	...	701
	3	217	100	13	...	7	...	9	...	...	1	347
	4	460	172	29	4	22	1	11	3	...	...	702
	5	23	17	2	...	...	...	...	...	...	...	42
	6	145	145	70	...	16	...	5	...	...	...	381
	7	3,512	960	232	14	158	14	232	25	3	...	5,150
Total ...	...	5,335	1,698	396	21	221	17	260	29	3	1	7,981

DIX A.

COMPARTMENTS.

Classes)— (continued).

KAIL.

3"—6".	6"—12".	12"—18".		18"—23".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
4	..	...	...	...	...	...	...	...	..	4
30	1	...	...	...	...	...	...	..	...	31
47	13	...	...	...	...	...	...	...	...	60
224	61	7	...	...	...	...	...	...	...	292
24	16	...	...	...	...	...	...	...	...	40
169	16	1	...	...	...	...	...	...	...	186
55	19	...	...	...	...	...	...	...	...	74
30	19	2	...	...	...	...	...	...	...	51
103	20	...	...	...	...	...	...	...	...	123
199	77	24	1	4	...	1	...	...	...	306
258	72	1	...	...	...	...	...	...	...	331
1,068	314	14	1	2	...	8	...	...	...	1,402
509	71	23	2	8	1	3	...	...	...	617
43	3	...	...	...	...	...	...	...	...	46
2,818	702	72	4	14	1	12	...	...	...	3,623
2,403	121	132	3	67	5	61	8	2	4	2,806
3,849	251	106	5	59	8	46	16	2	2	4,344
489	104	129	3	49	...	50	17	6	...	847
587	127	69	3	26	3	32	8	...	...	855
541	161	57	3	8	4	4	3	3	3	787
714	201	57	3	16	1	3	3	1	...	999
8,588	965	550	20	225	21	196	55	14	9	10,638
6	...	...	...	...	...	...	...	...	...	6
1	1	...	...	...	...	...	...	..	...	2
...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	10
196	86	28	...	1	...	...	...	...	...	311
48	12	...	...	...	...	...	...	...	...	60
261	99	28	...	1	...	...	...	...	...	389
2	4	...	..	...	...	...	...	...	...	6
1	...	...	...	...	...	...	...	..	...	1
1	..	...	...	...	...	...	...	..	..	1
1	...	..	...	...	...	...	.	.	..	1
25	7	2	...	...	...	...	...	...	...	34
3	1	1	...	...	...	...	...	...	...	5
33	12	3	...	...	...	..		..	.	48
2	3	1	...	...	...	...	...	...	...	6
...	..	..	...	...	...	.	...	...	...	...
..	...	.	...	...	...	...	...	...	...	...
2	3	1	..	.	.	...	...	..	...	6
1	1	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	..	...	...
1	1	...	...	...	...	..	...	...	..	2
666	439	106	2	18	1	10	...	2	1	1,245
445	140	26	9	5	...	3	...	...	...	628
128	54	22		1	1	...	...	...	...	206
129	97	26	...	8	...	2	...	...	...	262
175	178	56	...	7	...	...	...	...	...	416
213	105	10	...	...	...	...	...	...	...	328
387	157	32	3	2	...	...	...	...	...	581
2,143	1,170	278	14	41	2	15	...	2	1	3,666

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	CHÍR.										Total.
		8″—6″.	6″—12″.	12″—18″.		18″—24″.		Above 24″.				
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Mohna ...	1	...	...	...	...	...	...	...	...	...	...	..
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	. .	...	...	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
	7	1	..	...	...	..	...	...	...	...	...	1
	8	...	1	...	...	...	...	...	...	...	...	1
	9	2	...	...	...	...	...	...	...	...	...	2
	10	...	...	...	...	...	...	...	...	...	...	...
	11	...	...	...	...	...	...	...	...	...	...	...
	12	...	...	...	...	...	..	...	...	...	...	...
	13	...	...	...	...	...	...	...	...	...	...	...
	14	...	...	...	...	...	.	...	...	...	...	...
Total ...	...	3	1	...	...	...	...	...	...	...	...	4
Durání ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	6	1	...	...	1	.	...	...	...	...	8
	3	.	2	3	...	3	...	3	1	...	...	12
	4	...	9	2	...	...	...	...	...	...	...	6
	5	1	...	1	...	...	1	...	.	1	..	4
	6	...	...	...	...	...	. .	...	...	...	...	...
Total ...	...	7	6	6	...	4	1	3	1	1	...	29
Ekra ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	..	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	..	...	...	...	...	...
Kulored ...	1	...	...	...	. .	..	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
	5	...	...	...	...	...	...	...	..	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	...	...	...	...	...	...
Anuókri .	1	6	10	7	...	...	...	...	...	...	...	23
	2	. .	...	...	...	...	...	...	...	...	...	...
	3	...	1	...	...	1	...	...	...	...	...	2
Total ...	...	6	11	7	...	1	...	...	.	...	...	25
Dánda ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	11	45	45	1	9	...	4	...	1	...	116
Total ...	...	11	45	45	1	9	...	4	...	1	..	116
Hajáwa .	1	...	...	...	...	...	...	...	...	..	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	. .	...	...	...	...	...	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
	7	...	...	...	...	...	...	...	...	...	...	...
Total ..	...	...	..	...	...	...	...	...	...	...	...	...

DIX A.

COMPARTMENTS.

Classes)—(continued).

RAI.

3"—6".	6—12".	12"—18."		18—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
40	63	19	2	3	...	2	2	...	...	140
155	158	77	18	32	4	19	3	1	...	462
528	152	109	2	67	9	36	25	2	1	931
1,688	631	278	8	157	5	168	13	1	...	2,949
642	510	201	7	113	8	78	11	...	...	1,570
502	157	67	9	45	7	36	16	2	...	841
349	89	68	1	65	4	46	11	...	1	634
1,023	373	216	9	108	12	128	61	4	1	1,995
622	139	66	2	34	1	31	3	1	..	899
1,256	876	425	28	251	35	104	45	5	1	3,116
126	39	26	...	15	1	7	3	...	...	217
1,012	453	196	8	108	6	129	14	2	..	1,928
750	348	272	22	233	16	148	24	2	...	1,810
460	174	112	2	69	4	23	7	...	...	851
9,162	4,162	2,132	113	1,360	112	1,040	238	20	4	18,343
2,126	503	373	32	233	44	343	130	66	30	3,889
1,256	356	156	17	133	12	281	107	6	3	2,327
250	90	96	7	31	1	86	12	8	3	584
138	60	38	...	19	2	37	7	2	2	300
2,921	1,544	859	76	653	113	828	209	172	38	7,413
2,204	722	648	37	409	48	449	107	40	20	4,084
8,890	3,275	2,170	169	1,478	220	1,074	581	294	96	19,147
41	42	10	3	7	1	3	8	...	...	115
...	1	...	...	...	...	..	...	...	...	1
1	.	...	..	...	...	...	.	...	...	1
95	30	25	...	11	3	13	6	1	...	184
2,175	1,340	555	45	225	58	95	56	8	...	4,566
393	245	168	12	82	13	109	18	6	2	1,048
2,705	1,667	758	60	325	75	220	88	15	2	5,915
17	3	...	...	1	...	1	...	...	...	22
3	...	...	...	...	..	...	...	...	..	3
9	2	..	...	..	..	..	...	...	..	11
56	21	5	...	...	...	...	..	...	..	82
757	412	131	5	57	8	36	12	1	...	1,419
60	39	39	2	19	4	34	5	...	...	202
902	477	175	7	77	12	71	17	1	..	1,739
15	12	1	...	...	..	...	...	.	...	28
1	...	.	...	.	...	.	...	..	...	1
...	.	..	...	...	...	...	...	...	..	...
16	12	1	...	...	...	...	...	...	...	29
5	6	1	2	1	..	...	..	.	...	15
.	1	...	...	.	.	...	...	...	...	1
5	7	1	2	1	..	...	..	..	...	16
3,400	1,099	355	54	215	21	377	67	6	3	5,597
1,805	540	373	52	366	69	417	142	11	4	3,779
1,843	956	848	89	829	39	1,068	98	19	7	5,796
1,856	1,259	788	116	536	130	456	237	4	7	5,359
189	92	57	3	14	2	58	7	2	...	424
1,324	877	308	18	104	15	60	18	1	...	2,785
3,212	2,108	806	116	508	81	632	217	41	5	7,786
13,629	6,931	3,565	448	2,632	357	3,068	786	84	26	31,526

APPEN

CONTENTS OF

(*Diameter*

Name of block	Number of compartments.	DEODÁR.										
		3″—6″.	6′—12″.	12″—18″.		18″—24″.		ABOVE 24″.				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound	Unsound	Sound.	Unsound.	Erect.	Fallen.	
Duliána ..	1	421	280	110	1	15	1	4	...	...	...	841
	2	42	34	14	1	3	...	6	...	...	...	100
	3	66	61	57	4	55	1	109	6	2	1	302
	4						Not valued.					
Total ...	..	529	375	190	6	73	2	119	6	2	1	1,303
Pandáwa .	1	541	288	75	1	18	2	62	3	2	...	992
	2	302	110	39	...	19	...	27	1	...	..	588
	3	140	18	4	...	1	...	2	...	...	...	174
Total ...	...	1,082	416	118	1	38	2	91	4	2	...	1,754
Rikta ...	1	1,377	309	101	2	93	8	108	6	1	...	2,095
	2	837	293	90	1	44	2	62	3	..	...	1,332
	3	2,653	1,804	442	4	230	9	466	11	2	3	5,124
Total	...	4,867	1,996	633	7	367	19	636	20	3	3	8,551
Rajamára	1	8,350	3,217	898	35	775	27	789	10	5	2	14,114
	2	487	100	63	1	66	8	197	20	1	...	1,003
	3	1,795	893	370	15	308	6	410	49	12	3	3,801
Total ...		10,632	4,210	1,331	51	1,149	41	1,396	85	18	5	18,918
Leguna .	1	42	14	2		2	..	8	..	..	...	68
	2	1,631	800	236	8	152	1	302	1	5	...	3,246
	3	2,458	979	348	4	274	...	413	2	3	2	4,483
	4	4,760	2,212	501	11	308	10	572	24	7	3	8,498
	5	3,919	1,631	583	23	448	13	581	54	22	5	7,279
	6	51	17	5		3	..	1		1		78
	7	185	122	62	1	53	2	99	2	...	1	527
Total .	..	13,066	5,865	1,737	47	1,330	26	1,976	83	38	11	24,179
Konain ...	1	869	650	585	7	277	6	377	9	..	..	2,789
	2	3,837	1,317	574	1	452	1	681	18	2	..	6,883
	3	393	785	157	4	121	14	217	15	5	.	1,161
	4	3,001	1,424	881	14	201	5	408	13	3	5	5,455
	5	2,785	1,090	322	14	175	9	466	44	4	1	4,910
	6	133	93	31	1	18	3	45	4	.	...	328
	7	10,293	4,134	396	5	365	3	415	11	9	..	15,631
	8	1,247	448	98	1	55	1	65	2	2		1,919
Total ..	...	22,558	9,400	2,544	47	1,664	42	2,674	116	25	6	39,076
Karáli ...	1	185	127	32	1	36	...	75	1	.	...	457
	2	1,080	426	82	.	50	.	114	..	2	.	2,354
	3	8,105	2,860	524	10	378	5	227	5	1	4	12,114
	4	1,101	411	96	...	65		108	2	.	...	1,873
	5	4	.	...		1	.	2	...	..	...	7
Total .		11,165	3,824	734	11	525	5	526	8	3	4	16,805
Siári ...	1	94	44	22	1	24	.	88	4	..	1	278
	2	810	368	181	9	110	7	102	21	4	2	1,060
	3	2,245	877	206	12	144	12	211	16	.	.	3,723
	4	475	331	105	2	44	4	101	5	2	2	1,071
Total ...	...	3,624	1,620	464	24	328	28	592	46	6	5	6,782
Gutugád ..	1	228	195	140	4	113	4	104	15	12	17	832
	2	1,064	473	206	5	189	21	146	15	38	9	2,166
	3	1,193	357	329	6	270	29	659	72	40	28	2,992
	4	13	2	7		1		6	...	.	.	29
	5	2,495	657	392	12	280	32	589	74	63	101	4,685
	6	2,870	973	360	23	242	27	413	77	25	34	4,844
Total .		7,863	2,657	1,434	50	1,095	113	1,807	253	207	189	15,528
Bhujkoti ...	1	581	323	25	5	29	0	20	8	3	2	1,011
	2	3,769	573	266	58	277	66	427	152	24	11	5,618
	3	9,501	1,468	611	97	482	109	449	95	47	40	12,899
Total ...	...	13,851	2,364	902	155	788	181	905	255	74	53	19,528
Karámba .	1	1,423	351	98	10	144	4	48	146	16	7	2,247
GRAND TOTAL ...	...	231,052	110,935	32,227	867	18,398	932	23,657	1,026	505	341	421,530

DIX A

COMPARTMENTS

classes)—(continued).

KAIL

3′—6	6—12	12—18		18—24″		ABOVE 24				Total
						Green		*Dry*		
		Sound	Unsound	Sound	Unsound	Sound	Unsound	Erect	Fallen	
23	4	2								29
75	64	13	1	1						154
24	7			1						32
					Not	valued				
122	75	15	1	2						215
51	25	7		1		1				85
109	109	23	1	3						305
8	4				1					13
228	138	30	1	4	1	1				403
14	9	1								24
11	5	2								18
56	17	5		1						98
80	51	8		1						140
1 417	728	114	15	55	13	43	7	2		2,394
3 225	470	82	4	37	8	79	22	4		3 681
425	155	30	3	6	1	16	1	2		639
5 067	1 108	170	22	98	22	138	30	8		6 714
4	1	11		2	2	2	2			24
3 346	685	148	30	88	26	109	12	14	5	4,523
1 734	124	31	2	36	2	58	2			1 992
1 372	620	104	3	47	10	18	6			2 240
653	251	70	1	18	2	12	2		1	996
10	17	2								79
441	105	50	9	25	4	37	6		1	683
7 610	1 803	470	45	216	46	236	30	14	7	10 587
18	5	3		1		1				28
449	122	18		13		11	2			615
61	29	2		2						94
835	310	91	5	50	13	67	9	5		1 391
1 108	233	102	10	70	8	90	30	4		1 715
308	48	24	2	26		48	8			424
5 520	2 168	340	7	103	11	198	11	6	1	8 455
155	120	31		18		18	1	1		345
8 494	3 041	611	24	373	32	433	63	16	1	13 088
97	70	26	4	24	1	64	3	1		272
715	219	52	3	26	3	64	11			1 118
3 382	1 218	373	23	261	37	331	37	13	1	5 662
3 177	1 075	282	16	116	10	205	31	44	6	4,962
1	9			3	1	4		1		19
7 302	2 601	735	52	430	52	658	82	51	7	12 028
11	20	11		13	2	18	2			77
36	1	10	1	6			1			69
366	150	22		5		9	1			553
108	111	14		2						235
571	280	57	1	26	2	27	4			964
45	18	1								64
43	23	6					1	1		80
3 089	237	80	1	80	4	73	9	20	4	3,547
411	53	21	1	13	1	16	20			516
277	187	30		16		5	2	1	2	506
22	20						1			43
3 817	524	144	2	103	5	94	33	22	6	4,756
35	13	2								50
891	202	70	2	25	6	22	14	6		1,247
245	79	5								289
1 151	274	86	2	25	6	22	14	6		1,586
31	9	2								42
112 754	32 418	11 151	480	5 032	496	5 186	912	277	87	168 793

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	CHÍR.										Total.
		3″—6″.	6″—12″.	12″—18″.		18″—24″.		Above 24″.				
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Duliána	1	...	...	...	...	...	...	...	...	...	...	..
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	..		...	...	...	...	...
	4					Not	valued.					
Total ...		...	...	...	...	...	..	...	...	...	...	..
Pandáwa	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	..	...	...	...	...
Total ...		...	...	...	..	...	...	...	...	...	..	...
Rikta	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	..	...	...	...	...	...	...
Total ...		...	..	...	..	...	...	.	...	...	..	...
Bajamára	1	...	...	...	...	..	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	1	...	...	...	..	...	...	...	...	...	1
Total ...		...	1	...	...	...	...	...	...	...	..	1
Legúna	1	...	8	10	...	7	...	16	...	...	...	41
	2	..	1	...	...	1	...	..	...	...	...	2
	3	...	...	..	...	...	...	...	...	...	...	...
	4	.	1	...	...	...	...	...	...	...	...	1
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	..	...	...	...	...	...	...	...	..
	7	...	...	...	...	...	...	..	...	...	..	...
Total ...		...	10	10	..	8		16	...	...		44
Konain	1	...	..	1	...	...	...	1	...	...	...	2
	2	...	...	...	...	...	...		...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
	5	...	...	...	...	..	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
	7	...	...	...	...	...	...	...	...	...	...	...
	8	...	...	...	...	...	...	...	...	...	...	...
Total ...		...	...	1	.	...	...	1	...	...	...	2
Karáli	1	...	7	3	...	4	...	8	...	.	...	22
	2	81	141	100	...	72	...	87	...	...	...	481
	3	6	9	...	..	8	...	7	...	...	1	31
	4	.24	40	53	1	34	...	21	1	.	1	175
	5	182	754	787	3	600	3	408	1	2	...	2,800
Total ...		293	951	943	4	718	3	501	2	2	2	3,509
Siári	1	2	...	3	...	2	...	2	...	...	...	9
	2	...		...	...	...	...	...	...	...	...	...
	3	...	...	...	..	.	...	...	...	..	...	...
	4	...	...	...	...	...	...	...	...	..	...	...
Total ...		2	..	3	...	2	...	2	.	..	...	9
Gutugád	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	3	..	..	...	.	...	4	...	...	...	7
	4	40	82	60	1	31	1	30	1	2	...	248
	5	...	1	.	...	...	...	...	...	...	...	1
	6	..	...	...	...	...	...	...	...	...	..	...
Total ...		43	83	60	1	31	1	34	1	2	.	253
Bhujkoti	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	1	...	...	..	...	...	...	..	...	1
	3	...	...	...	...	...	...	...	...	...	...	..
Total ...		...	1	...	...	...	..	..	..	..	...	1
Karámba ...	1	...	...	...	..	..	...	.	..	...	...	...
GRAND TOTAL ..	...	2,270	3,530	3,314	34	2,434	30	2,011	44	16	3	14,286

DIX A.

COMPARTMENTS.

classes)—(continued).

RAI.

3"—6".	6—12".	12"—18".		18"—24".		ABOVE 24"				Total.
						Green.		*Dry.*		
		Sound.	Unsound	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound	
2,277	968	469	15	306	23	615	74	18	6	5,771
3,083	1,926	546	44	409	56	555	60	28	4	6,661
35	34	35	11	35	10	09	44	6		279
					Not	valued.				
6,345	2,928	1,050	70	750	89	1,239	178	52	10	12,711
939	1,036	561	45	353	27	709	73	11	2	3,756
1,686	1,133	594	29	468	33	570	77	10	4	4,604
102	53	13	..	7	...	10	...	1	..	186
2,727	2,222	1,108	74	828	60	1,289	150	22	6	8,546
290	104	43	1	30	6	53	16	1	.	550
163	118	47	7	49	6	44	15	..	...	449
2,082	1,367	589	29	272	32	630	88	4	6	5,099
2,535	1,589	679	37	357	44	727	119	5	6	6,098
6,318	3,990	864	145	412	104	380	209	6	6	12,434
880	301	110	11	99	19	175	75	5	3	1,628
2,627	1,390	474	35	815	33	342	95	15	3	5,329
9,775	5,681	1,448	191	826	156	897	379	26	12	19,391
8	4	..		1	.	3	..	...	.	16
448	309	134	21	90	16	237	90	...	2	1,356
327	127	45	5	28	8	62	43	...	.	645
7,083	5,154	1,491	130	805	124	1,453	467	41	18	17,426
3,285	1,870	533	61	309	43	332	114	29	5	6,590
335	214	48	5	14		1		1		618
540	412	89	8	72	18	91	56	1	2	1,289
12,626	8,099	2,340	230	1,379	209	2,179	779	72	27	27,940
16	12	2		2	...	2	..	..	.	34
100	47	18		17	.	13	1	1		192
444	219	80	4	51	4	62	11	5		880
1,488	1,033	354	17	171	13	256	58	3	2	3,395
1,697	603	217	11	106	14	319	82	3	2	3,054
157	51	21	3	14	.	61	10	..	...	317
87	42	10	1	10	1	7	2	..	.	160
63	19	8	1	5	1	2	2	.		101
4,052	2,026	705	37	376	33	722	166	12	4	8,133
79	43	10		4	3	6	6	...		150
66	21	7	.	7	1	13	9		1	124
124	73	15	3	4	2	5	6	...	...	232
2	.	.	.	...	.	.	.	...	...	2
	...	..	...	.			.	.	..	.
271	136	32	3	15	6	23	21	.	1	508
23	6	5		5	1	8	4	...	...	52
218	91	54	6	36	5	56	13	2	.	481
4,589	2,998	1,613	75	1,006	56	1,240	145	21	2	11,754
1,530	1,351	434	56	390	36	936	20	20	2	4,781
6,360	4,446	2,106	137	1,427	98	2,240	188	43	4	17,068
456	263	111	1	62	1	51	4	27	7	983
1,484	1,038	377	11	211	18	368	31	48	28	3,614
585	244	157	3	151	12	382	57	18	11	1,620
				...	.				.	
1,460	683	172	6	102	6	223	23	34	22	2,731
484	114	70	2	53	1	83	15	6	2	830
4,469	2,342	887	23	579	38	1,107	130	133	70	9,778
512	259	82	13	93	12	128	15	30	7	1,151
2,051	742	208	20	220	34	388	145	25	14	3,853
3,044	986	493	141	608	110	1,107	187	113	45	6,834
5,607	1,987	783	174	927	156	1,623	347	168	66	11,888
684	582	321	23	192	11	128	30	22		1,993
208,305	118,053	55,078	4,053	35,302	3,890	40,399	8,780	2,030	895	473,291

APPEN

CONTENTS OF

(*Diameter*

Name of block	Number of compartments	3"—6"	6"—12"	12"—18".	
				Sound.	Unsound
Bodiár	1	651	478	98	5
	2	35	17	10	1
	3		..		.
	4	1		...	...
	5	34	22	26	...
	6	.			1
	7	13	...		..
Total	..	734	517	134	7
Moila	1		...		
	2	...		...	...
	3	25	32	6	2
	4	10	40	75	7
	5	121	77	41	7
	6	170	31	6	3
	7	1			..
	8	1		1	.
	9	2	.		
Total ...	..	330	180	129	19
Missati	1	53	16	17	1
	2	406	181	76	1
	3	224	205	37	4
	4	57	32	24	
	5	...			
	6	1		..	
	7	3	2	4	
Total	...	744	436	158	6

DIX A.

COMPARTMENTS.

classes)—(continued).

MOHINDA.

18"—24".		Above 24".				Total.
		Green.		*Dry.*		
Sound.	Unsound.	Sound.	Unsound.	Erect	Fallen.	
55	5	29	3	2	..	1,326
8	...	10	4	..	..	85
.		.	..	...	...	...
1	...	...	...	...	...	2
22	1	19	4	1	.	130
...	...	..	..	.	...	...
1	.	1	...	..	...	15
87	6	59	11	3	.	1,558
			.	.	...	...
...				...	..	..
2	4	2	1	...		74
32	11	35	13	6	5	234
36	9	45	93	2	2	433
4	1	9	2	1	..	227
..	.	..	...	.	.	1
.	.		...		.	2
...				...	..	2
74	25	91	109	9	7	973
13	2	5	4			111
29	8	41	21	1		704
25	3	22	2	.		522
13	.	15	6	.	.	147
...	.		...	.	...	..
...	...	.	1	...	...	2
2	1	6		.	...	18
82	14	89	34	1	...	1,564

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	MORU.										
		3"–6".	6"–12".	12"–18".		18"–24".		Above 24".				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Kua ...	...	...	...	...	...	...	...	...	...	...	...	...
Singori ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	...	...	...	...	...	...
Kota ...	...	...	...	...	...	...	...	...	...	...	...	...
Bándla ...	...	...	...	...	...	...	...	...	...	...	...	...
Kurwa ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	..	...	...	...	...	...	...	..	...	...	...
Raura ...	...	...	...	...	...	...	...	...	...	...	...	...
Inári ...	1	84	385	110	51	20	12	3	5	...	...	677
	2	894	1,773	345	82	45	76	16	39	1	...	3,271
	3	150	311	36	26	3	4	..	6	...	...	536
	4	215	625	182	107	42	51	13	20	1	...	1,256
	5	241	729	205	120	53	52	11	88	2	2	1,502
Total ...	..	1,584	3,822	878	380	163	202	43	158	4	2	7,242
Bodiár ...	1	308	714	258	102	55	27	15	24	..	...	1,503
	2	659	1,608	582	127	152	67	26	29	1	..	3,811
	3	194	729	308	118	96	64	50	32	2	.	1,595
	4	464	1,375	478	135	140	97	88	96	2	...	2,875
	5	473	1,437	484	163	114	83	35	56	..	...	2,845
	6	779	870	322	109	90	51	25	25		...	2,287
	7	72	143	135	70	43	40	30	14	1	...	553
Total ...	...	2,949	6,042	2,567	824	697	429	269	286	6	..	14,960
Molla ...	1	2,115	1,574	882	289	221	69	243	115	47	27	5,582
	2	176	166	77	43	16	3	7	7	4	.	499
	3	1,042	928	293	87	130	35	183	43	31	8	2,780
	4	25	24	10	7	.	...	2	3	2	1	74
	5	86	19	9	3	1	5	4	1	..	...	78
	6	846	444	129	40	44	13	53	27	4	..	1,600
	7	1,161	410	90	64	18	8	62	18	...	..	1,831
	8	522	214	93	20	27	7	18	8	...	...	909
	9	389	233	100	45	7	3	3	5		...	785
Total ...	...	6,312	4,012	1,683	548	464	143	575	227	88	36	14,088
Missau ...	1	28	41	2	1	..	...	...	...	...	...	70
	2	121	189	46	3	15	3	4	1	..	.	382
	3	125	110	13	9	2	1	...	...		..	260
	4	151	215	25	25	3	6	1	9	.	...	435
	5	24	109	30	22	9	11	2	6	2	...	224
	6	405	638	295	134	80	81	52	56	...	.	1,801
	7	91	154	55	13	21	6	19	14	...	...	373
Total ...	...	1,003	1,456	475	207	130	108	78	86	2	...	3,545
Chátri ...	1	31	40	7	.	2	..	2	1	...	...	83
	2	...			.	...	...	...	.	.	...	..
	3	.	...	..	1	1	1	...	...	..		3
Total ...	...	31	40	7	1	3	1	2	1	..	...	86
Kanásar ...	..	140	50	4	3	.	3	..	1	...	...	206

DIX A

COMPARTMENTS

classes)—(continued).

BÁN

3"—6"	6"—12"	12'—18"		13'—24'		Above 24				Total
						Green		*Dry*		
		Sound	Unsound	Sound.	Unsound	Sound	Unsound	Erect	Fallen	
408	1,027	915	140	305	91	164	88	6	1	3,145
842	1,978	1,025	205	343	79	124	61	1		4,058
620	1,876	881	162	223	83	165	58	1		4,069
1,462	3,854	1,906	367	566	162	289	119	2		8 727
7,531	9,948	497	73	19	5					18,073
3,988	4,086	1,534	102	200	50	103	68			10,731
1,560	1 072	55	12	1						2,700
3,616	4,775	933	47	199	21	55	8			9,654
5,176	5,847	988	59	200	21	55	8			12,354
308	539	463	110	387	91	833	155	4	1	2,891
170	1,032	598	118	170	82	83	83	4	2	2,337
690	1,950	754	102	157	130	100	96	5	3	4,077
476	2,530	1,152	209	248	152	100	102	...	1	5,060
308	866	666	115	271	127	102	113	1	2	2,681
107	357	190	47	70	31	57	49	.	1	909
1,751	6,735	3,300	760	916	522	502	443	10	9	15 014
2	1	..	..	...	...				...	3
37	86	49	3	15	3	6	2	1	...	204
47	90	42	5	10	6	29	13			242
191	798	440	36	300	42	370	95	2	4	2,268
81	155	71	4	47	6	43	13			420
156	268	161	16	97	18	112	48			876
514	1,398	763	64	469	75	502	171	3	4	4 013
1,476	857	525	37	88	5	93	6	11	5	3 103
1,269	780	433	24	74	7	73	11	3		2,674
1,149	867	735	41	320	13	251	63	14	23	3,502
153	97	54	11	12	1	37	9	2		376
1,338	480	180	14	80	14	161	32	2		2,296
5,601	1,821	471	25	212	21	227	44	5	2	7,929
848	556	378	77	99	23	119	26	1		2,126
11,829	4,058	2,776	219	891	83	991	191	38	30	22,006
3	3		]					..		7
91	50	3	5	4	3	2	1			159
285	355	64	31	14	5	16	16			786
202	286	140	40	105	42	184	114	2	1	1,186
1,725	3,189	1,010	167	477	148	797	239	.		7,752
1,456	2,457	897	146	328	93	588	325	3	3	6,271
800	1,203	656	95	300	81	471	217			3,829
4,022	7,543	2,769	475	1,220	372	2,058	912	5	4	19,989
843	1,361	317	151	137	72	75	59		3	3,021
203	362	197	40	42	17	30	11	.		902
994	956	390	120	118	49	153	70			2,868
2,040	2,682	904	320	297	138	258	149		3	6,791
4,252	1,509	400	94	170	65	186	113	2	2	6,840

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	MORINDA.										
		3"—6"	6"—12".	12"—18".		18"—24".		Above 24".				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Kopti	1	56	217	190	2	73	6	72	16	1	...	633
	2	20	38	24	...	25	7	12	8	...	...	143
	3	13	37	53	1	06	2	86	21	...	1	280
	4	..	...	...	...	...	...	...	...	...	...	...
Total	...	98	292	267	3	104	15	170	45	1	1	1,056
Asmari	1	312	329	102	9	40	8	13	11	...	...	800
	2	91	159	92	15	11	3	3	7	...	...	381
	3	64	194	76	11	25	8	35	18	...	...	431
Total	...	467	682	330	35	82	19	51	36	..	...	1,702
Marauwa	1	..	..	..	...	..	.	...	...	...	...	...
	2	..	...	..	..	..	..	...	...	...	...	...
	3	...	...	...	...	...	..	...	..	...	...	...
	5	10	...	..	...	...	..	5	...	..	...	15
	4	...	..	...	...	...	.	..	...	...	...	...
Total	...	10	..	...	...	...	...	5	...	...	...	15
Thona	1	8	...	..	...	1	...	...	...	...	...	9
	2	1,330	1,801	784	10	240	14	108	16	1	..	4,804
	3	1,290	608	319	10	88	26	63	30	...	1	2,443
	4	15	9	10	2	4	...	4	2	...	...	46
Total	..	3,152	2,418	1,113	22	333	30	175	48	1	1	7,302
Kutuiár	1	333	105	35	...	14	2	..	1	...	...	550
	2	50	10	1	..	..	..	...	...	..	...	67
Total	...	..	383	181	36	.	14	2	...	1	...	...	617
Kanjátra	1	844	771	227	19	41	7	17	6	...	...	1,932
	2	4,318	882	632	57	266	40	50	33	1	3	6,282
	3	742	321	245	23	122	22	50	51	1	...	1,583
	4	4	.	1	..	1	...	1	1	...	..	8
	5	2,054	727	330	4	173	8	52	11	1	...	3,360
Total	...	...	7,902	2,701	1,435	103	603	77	176	102	3	3	13,165
Idli	1	...	...	...	..	..	..	..	...	..	...	...
	2	1	...	2	...	...	...	...	...	...	..	3
	3	1	2	..	..	...	..	1	...	.	..	4
	4	1,006	1,087	809	41	345	36	126	20	2	...	4,102
	5	1,421	573	437	10	50	15	20	5	2	1	2,543
	6	108	65	21	...	5	2	2	..	...	...	203
	7	2,106	1,761	756	15	134	2	22	13	3	3	4,875
	8	..	..	...	...	...	1	..	...	...	...	1
	9	255	295	140	1	14	1	2	...	1	.	709
Total	...	...	5,561	3,783	2,255	67	554	57	173	38	8	4	12,500

DIX A.

COMPARTMENTS.

classes)—(continued).

KARSHU.

3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
1,688	893	293	74	91	37	17	12	...	...	3,105
...	...	...	...	...	...	...	...	...	...	...
242	105	101	24	60	12	44	13	1	...	602
3	8	6	1	7	...	2	...	...	...	27
1,933	1,006	400	99	158	49	63	25	1	...	3,734
1,979	621	26	17	4	3	...	6	...	...	2,656
...	...	...	...	...	...	...	...	...	...	...
311	379	79	49	8	7	1	5	...	...	839
2,290	1,000	105	66	12	10	1	11	...	...	3,495
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
1,173	327	296	67	86	28	46	21	...	...	2,044
436	431	111	27	28	13	9	15	...	...	1,070
829	295	269	68	93	37	72	44	...	...	1,707
...	...	...	...	...	...	...	...	...	...	...
2,438	1,053	676	162	207	78	127	80	...	...	4,821
5,562	7,107	1,185	506	111	135	14	21	...	...	14,701
4,720	2,313	296	202	15	25	...	2	...	...	7,573
10,282	9,480	1,481	708	126	160	14	23	...	...	22,274
596	437	106	17	10	4	3	1	...	...	1,174
362	280	106	26	44	9	16	5	...	...	848
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
780	854	465	103	240	40	51	26	4	...	2,572
1,747	1,571	677	146	294	53	70	32	4	...	4,594
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
793	294	38	28	22	14	6	6	1	...	1,202
1,715	540	108	7	13	7	7	7	2	...	2,406
7,280	1,681	213	99	41	21	16	5	1	...	9,357
5,288	1,488	674	103	255	54	43	25	7	7	7,994
3,077	756	210	96	33	10	2	2	...	...	4,186
8,708	2,395	1,509	203	410	96	102	33	17	24	13,407
26,861	7,104	2,752	506	774	202	176	78	28	31	38,512

APPEN

CONTENTS OF

(*Diameter*

Name of block	Number of compartments	MORU										Total
		3"—6"	6"—12"	12'—18'		18'—24'		Above 24'				
								Green		Dry		
				Sound	Unsound	Sound.	Unsound.	Sound	Unsound	Erect	Fallen	
Kopti	1	561	545	110	50	29	24	35	36			1,390
	2	416	307	30	43	9	18	11	31			876
	3	92	45	20	18		2	1	3			181
	4	198	131	39	36	11	25	7	26			473
Total		1 267	1,028	208	147	49	69	56	96			2,920
Asmára	1	202	149	8	4	1	1		1			361
	2	118	286	44	77	9	36	1	10			581
	3	227	687	122	115	25	38	9	11			1,244
Total		557	1,122	100	196	35	75	10	22			2,186
Marauwa	1	140	51	14	19	5			3	1		233
	2	75	72	43	21	11	7	5	7			241
	3	38	29	24	11	9	"	12	4			127
	4		182	201	31	57		116	28	1	3	619
	5	70	120	54	30	30	13	16	6	1	2	312
Total		323	454	336	112	112	20	149	48	3	5	1,562
Thona	1	10	13	6	1	1	1	1				33
	2	85	104	36	8	5	2	2	4			246
	3	1,011	987	314	180	67	81	61	63	2		2,706
	4	1,023	1,325	435	209	238	186	160	220	1		3,797
Total		2 129	2 429	791	398	311	270	224	287	3		6,842
Kutmai	1	269	505	17	30							821
	2	44	44	2	1						.	91
Total		313	549	19	31							912
Kanjátra	1	184	280	42	23	10	12	3	5			518
	2	291	288	41	18	8	18	7	6			677
	3	1,395	1,512	656	221	258	156	134	190	2		4,424
	4	1,613	1,854	581	352	231	279	180	264	1	5	5,312
	5	101	102	26	5	1	4	1				240
Total		3,484	3,995	1,348	619	508	469	275	465	3	5	11,171
Jádi	1	865	1,107	256	160	58	48	27	32			2 553
	2	988	1,273	321	103	89	54	27	47	1	1	2,854
	3	248	173	22	0	1	1	1	2			452
	4	672	356	30	22	2		1				1,082
	5	590	91	9	1	...			1			701
	6	81	21	4			..					106
	7	167	56	5			...				.	228
	8	6	4	2								12
	9	6	4			..						10
Total		3,577	3 084	649	295	150	103	56	83	1	1	7,908
Darna	1	1,457	3 484	744	544	85	158	17	51	1	1	6,542
	2	83	153	29	25	3	10		5			308
	3	68	114	24	12	14	9	3	8			252
	4					Not	valued					
Total		1,608	3,751	797	581	102	177	20	64	1	1	7,102
Mashéngra	1	389	775	331	38	135	80	94	43	.		1 780
	2	1,550	2,204	645	156	183	54	47	30	1		4,820
	3	1 049	1,170	263	82	90	31	48	48			2,750
	4	312	581	282	17	159	45	106	79		..	1,581
	5	307	480	245	72	117	58	120	115			1,574
Total ..		3,661	5,170	1,765	365	684	218	415	315	1		12,544

DIX A.

COMPARTMENTS.

classes)—(concluded).

BÂN.

3"—6".	6"—12.	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
6	7	20	1	5	...	3	..	...	...	42
22	19	14	2	5	5	16	9	...	...	92
201	57	11	2	6	5	4	5	...	...	291
278	200	75	11	54	12	49	30	1	...	710
507	283	120	16	70	22	72	44	1	...	1,135
...	...	...	...	...	...	...	...	...	...	...
..	1	...	1	...	...	...	...	...	...	2
2	2	...	...	...	...	...	...	...	...	4
2	3	...	1	...	...	...	...	...	...	6
1,785	575	466	129	259	64	212	104	5	1	3,000
720	1,022	1,015	120	434	65	489	120	10	5	3,956
138	134	170	23	130	25	220	73	...	...	907
30	94	70	3	50	1	70	5	1	...	324
102	150	153	16	48	4	72	20	3	4	507
2,770	1,975	1,874	290	916	159	1,013	322	19	10	9,354
...	...	...	...	...	...	...	...	...	...	...
...	...	...	..	...	...	...	...	...	...	...
25	26	13	1	4	...	23	11	...	...	103
94	179	172	21	68	17	102	58	1	..	722
119	205	185	22	87	17	125	64	1	...	825
2	5	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...
2	5	..	...	...	...	...	...	...	..	7
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	..	...	...	...	...
4	4	2	...	1	...	1	1	...	...	14
163	469	269	77	141	78	115	104	...	..	1,416
...	...	...	...	...	...	...	...	...	...	..
167	478	272	77	142	78	116	105	...		1,430
891	1,361	469	97	178	29	168	45	3	...	3,241
62	112	76	4	30	10	23	7	...	..	324
48	59	11	3	1	...	1	...	...	...	123
19	15	4	1	...	...	...	...	...	...	39
...	...	...	...	...	...	...	...	...	...	..
...	..	...	...	...	...	...	...	...	...	...
1	1	...	...	...	...	...	...	...	...	2
..	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
1,021	1,548	560	105	209	39	192	52	3	.	3,729
454	980	442	58	231	62	182	85	3	11	2,517
356	809	395	76	261	87	197	92	8	4	2,285
244	586	491	91	316	65	369	107	14	6	2,289
				Not	valued.					
1,054	2,384	1,328	225	808	214	748	284	25	21	7,091
29	114	79	2	43	5	54	14	1	.	341
52	962	554	41	227	34	206	57	...	1	2,134
2,704	2,229	720	83	316	46	354	86	1	.	6,539
91	244	165	6	110	13	112	28	...	...	769
75	75	76	8	28	4	68	13	...	...	347
2,951	3,624	1,594	140	724	102	794	198	2	1	10,130

APPEN

CONTENTS OF

(*Diameter*

Name of block	Number of compartments.	MORINDA										Total.
		3″—6″	6″—12″	12″—18″		18″—24″		Above 24″				
								Green		*Dry*		
				Sound	Unsound.	Sound	Unsound	Sound	Unsound	Erect	Fallen	
Mohna	1	...	...	...		...	...	...		..	.	
	2	21	6	5		1	4	...	1	...	...	39
	3	5	1	..		2		1	.	..	...	9
	4	2,953	409	118	1	64	1	26	4	...	.	3,576
	5	2,794	1,621	307	1	146	15	25	7			5,006
	6	699	346	112	11	24	3	5	4	...	...	1,144
	7	65	27	12	.	6	..	...	. .	...	2	109
	8	2,133	480	148	10	61	13	17	11	..	.	2,884
	9	77	16	3		3		...	..	7	...	99
	10	1,376	574	129	3	45	3	34	7	..	...	2,171
	11	29	8	4	...	2	..	1	1	.	...	88
	12	324	246	66		18	3	135	2	..	...	804
	13	1,502	598	247	14	149	5	69	6	..	.	2,530
	14	54	13	9	...	10	1	..	...	..	..	87
Total		11,905	4,294	1,270	40	530	48	304	43	2		18,496
Durání	1	5	12	7	2	2	1	3	1	1	...	34
	2	41	50	34	6	8	1	4	3	2	.	149
	3			...	...	..	.	...	...	...		
	4		...			...		...	...		.	...
	5	7,285	3,412	1,300	61	566	90	296	97	80	12	13,199
	6	3,123	945	517	25	164	17	73	28	11	2	4,905
Total	...	10,454	4,419	1,858	94	740	109	376	129	94	14	18,287
Ekra	1			...	...	...	...	...	...	...	..	...
	2	.	.	...	.	.	.	...	...		...	
	3					...		...	...			
	4			..				...	...	.	...	..
	5	2,518	1,676	451	15	68	31	...				...
	6	56	38	24		31	3	30	20	1		4,900
								50	10	2	...	214
Total		2,574	1,714	475	15	99	34	70	30	3	..	5,014
Kulered	1		2	...	..			...		...		2
	2							..	.	...	.	
	3							...		..	..	
	4			..			.	...		...		
	5	15	7	2	1	... 1	1	...		...		...
	6	56	29	12	1	2		..	1	...		28
								1		...	.	101
Total	...	71	38	14	2	3	1	1	1			131
Amlokri	1	1	1									
	2	...	...	..		..	..	...		...		2
	3	...				.		...		..		
								...		.	.	
Total	1	1	1		..	...	.	...			..	2
Hajawa	1	2,344	919	242	23	92	16	72	27	4	2	4,340
	2	2,625	496	544	81	515	82	308	132	4	6	4,793
	3	3,344	2,579	1,430	70	563	41	248	25		.	8,290
	4	1,932	1,231	434	54	152	39	47	30	1	1	3,921
	5			3								3
	6	1,945	1,432	372	10	64	9	41	19	1		3,893
	7	11,870	4,990	1,633	173	446	121	184	162	10	4	19,597
Total	...	24,550	11,647	4,658	410	1,882	308	900	395	20	13	44,733

DIX A.

COMPARTMENTS.

Classes)—(continued).

KARSHU.

3"—6".	5"—12".	12"—15".		15"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
..	...	.	..	.	...	...	...	...	...	...
25	22	8	...	1	1	...	...	...	...	57
...	...	...	...	...	...	...	...	...	...	..
9,725	3,962	2,357	116	943	112	411	77	...	...	17,103
3,456	1,583	624	131	320	107	139	88	1	...	6,449
367	182	53	12	23	7	7	6	...	..	656
1,863	709	389	88	112	46	18	29	..	...	3,253
1,395	630	298	27	117	23	21	18	...	...	2,538
1,870	731	364	32	106	14	42	27	...	...	3,192
827	425	201	25	87	15	32	13	...	...	1,625
185	132	74	15	45	18	17	6	...	...	487
1,112	319	129	13	51	8	31	9	...	...	1,672
512	194	73	10	26	7	2	1	...	...	825
194	89	60	8	17	8	4	3	...	...	383
21,536	8,387	4,630	477	1,847	361	724	277	1	...	38,240
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	.
..	...	..	..	..	..	...	...	...	...	...
618	207	36	8	7	3	1	3	3	...	886
65	17	18	6	4	...	...	...	...	...	109
683	224	54	13	11	3	1	3	3	...	995
..	...	...	...	...	...	...	...	...	...	..
...	...	...	..	...	...	...	...	...	...	..
..	...	...	...	..	...	..	...	..	...	
...	..	...	.	.	...	...	..	..	...	.
2,561	1,184	192	88	33	42	6	20	...	...	4,126
...	...	...	..	..	..	...	...	...	...	...
2,561	1,184	192	88	33	42	6	20	...	...	4,126
...	...	...	...	...	...	...	...	...	...	.
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	..	...	...	...	...	..	...	...	...
...	...	...	..	...	..	...	...	...	...	..
...	...	...	...	...	...	...	..	...	...	..
...	..	...	..	...	...	..	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	.	...
...	..	..	...	..	...	..	...	...	..	..
...	..	...	...	.	...	..	.	..	...	..
..	...		...	...	...	...	...	...	...	..
...	.	..	...	..	...	...	...	...	...	..
975	1,153	453	105	101	36	23	25	1	...	2,872
...	...	...	...	...	...	...	...	...	...	...
22,227	13,832	3,602	668	590	270	202	131	...	...	41,618
15,136	6,842	2,621	746	472	258	139	261	10	5	25,990
38,838	21,327	6,786	1,519	1,169	564	364	417	11	5	70,480

APPEN

CONTENTS OF

(*Diameter*

Name of block	Number of compartments	MORU.										Total.
		3″—6″.	6″—12″.	12″—18″.		18″—24″.		Above 24″.				
								Green.		*Dry.*		
				Sound.	Unsound	Sound.	Unsound	Sound.	Unsound.	Erect.	Fallen.	
Moluna	1	354	533	373	152	162	119	61	97	...	.	1,851
	2	30	942	365	94	99	60	51	67	...	.	1,708
	3	1,066	1,207	491	241	198	130	116	151	1	2	3,663
	4	67	65	15	2	2	1	...	1	...	.	153
	5	202	411	130	40	22	13	23	22	...	. .	863
	6	317	261	190	49	121	52	74	55	.	1	1,120
	7	270	157	80	21	40	20	37	14	...	...	639
	8	733	463	298	68	212	54	106	71	...	...	2,004
	9	382	475	301	27	122	10	105	36	. .	..	1,459
	10	601	670	260	55	97	46	40	34	...	...	1,805
	11	115	167	84	18	26	17	11	5	...	...	443
	12	281	385	151	34	52	25	24	14	...	...	966
	13	130	265	173	31	50	13	14	4	...	...	680
	14	119	202	117	23	23	16	11	6	...	...	517
Total ...	...	4,667	6,202	3,028	855	1,227	578	673	577	1	3	17,871
Durúm	1	1,047	807	537	239	125	107	117	135	21	4	3,139
	2	666	491	395	104	94	53	115	96	7	4	2,085
	3	214	286	181	41	45	30	36	15	6	1	855
	4	247	264	95	32	41	25	32	21	2	..	759
	5	213	174	96	33	21	17	17	18	2	6	597
	6	355	226	153	25	37	13	32	25	1	...	867
Total ...	...	2,742	2,248	1,457	534	363	245	349	310	39	15	8,302
Ekra	1	449	1,342	592	268	199	129	85	136	...	...	3,200
	2	188	288	72	26	10	6	10	8	...		617
	3	309	380	198	40	50	21	24	26	.	...	1,056
	4	3,388	2,712	1,117	458	469	262	240	247	7	2	8,891
	5	798	1,111	516	141	203	91	97	46	...	...	3,003
	6	1,239	2,134	1,180	177	470	77	356	96	...	...	5,726
Total ...	..	6,351	7,967	3,675	1,110	1,416	586	821	558	7	2	22,493
Kulered	1	1,103	1,618	811	359	301	202	203	212	6	1	4,816
	2	303	811	223	68	94	31	48	24	2	...	1,902
	3	1,419	1,882	456	121	136	52	127	67	6	...	4,256
	4	519	965	198	81	59	42	57	30	...	...	1,049
	5	1,057	1,309	629	126	270	112	330	149	4	...	3,995
	6	844	1,493	630	138	316	97	209	95	...	...	3,822
Total ...	...	5,545	7,778	2,945	893	1,185	536	972	567	18	1	20,440
Amlokri	1	1,208	1,010	546	107	195	72	116	103	8	3	3,368
	2	71	140	548	20	82	15	65	4	2	1	948
	3	53	72	90	3	9	3	...	3	...	...	182
Total ...	..	1,332	1,222	1,183	130	286	90	181	110	10	4	4,498
Dánda	1	541	601	811	46	89	13	76	16		4	1,697
	2 & 3	331	216	176	32	70	20	46	24		...	915
Total ...	...	872	817	487	78	159	33	122	40	..	4	2,612
Hajáwa	1	882	995	496	158	138	88	234	127	1	...	3,119
	2	264	310	221	98	88	64	60	72	...	3	1,180
	3	643	416	220	66	72	19	61	28	1	...	1,536
	4	570	613	336	118	134	61	66	106	...	1	2,005
	5	404	892	651	99	270	74	350	142	3	1	2,886
	6	85	91	7	6	1	...	...	...	...	...	190
	7	190	153	78	20	31	21	30	54	1	...	587
Total ..	...	3,078	3,470	2,009	595	734	327	810	529	6	5	11,503

DIX A.

COMPARTMENTS.

Classes)—(continued)

BÁN

3"—6	5'—12'	12—18		18—24		ABOVE 24				Total
						Green		*Dry*		
		Sound	Unsound	Sound	Unsound	Sound	Unsound	Erect	Fallen	
28	152	187	19	64	9	25	8	1	...	514
53	216	113	9	43	6	23	4	1	..	468
511	610	408	53	249	44	221	73	3	1	2,173
..	..	..	...	.	..	..	..	0	.	
.	.		...	..	...		...	..	.	..
30	8	8	..	6	..	3	.		.	55
10	7	4		2	1	1	.	..	...	25
15	6	3	.	3	..	10	2	1	...	40
31	82	49	2	29	3	37	6	...	1	240
4	16	9	1	1	1	1	..	.	...	33
		.	..	..	1	..	...	.	..	1
1	1	..		.	..	1	...	..	..	3
		...	...	..	..	..	...	.	.	
1	3	2	1	...	..	..	..	..	...	7
684	1,101	783	85	417	65	323	98	6	2	3,559
135	169	251	21	135	21	101	12	4	2	853
123	110	117	21	67	11	78	26	...	1	554
50	34	50	6	24	2	31	6			203
160	270	277	12	87	21	77	23	10	3	940
.		..				..		.		
.		..	..	...			..		...	
468	583	695	62	313	55	287	67	14	6	2,550
177	667	602	44	289	44	246	75	2	3	2,149
647	1,036	636	60	614	29	266	47	1		3,336
163	282	256	11	151	13	166	27	3		1,072
245	496	328	34	133	16	91	20			1,363
22	52	19	5	6	4	7	4			119
692	1,475	801	73	166	21	92	20	..	.	3,340
1,946	4,008	2,642	227	1,358	127	868	193	6		11,378
187	421	340	35	170	24	142	37	8		1,364
403	444	219	19	139	24	118	43	5		1 413
603	723	286	29	131	22	116	24	1	1	1,936
27	37	21	3	5	1	1	.	.		95
315	750	508	23	276	19	271	27		2	2,191
322	804	432	42	160	30	76	11	1		1,968
1,857	3,269	1,806	151	875	120	724	147	15	3	8,967
970	1,052	1,091	120	651	91	431	163	6	3	5,178
492	840	822	106	348	144	1,093	208	46	14	4,113
247	761	569	134	288	122	198	75	2		2,396
1 709	3,253	2,482	420	1,287	357	1,662	446	54	17	11,687
1,275	1,629	1,533	146	463	85	261	67	8	2	5 409
513	1,010	1,438	252	712	213	487	257	15		4,897
1 788	2,639	2,971	398	1,175	298	748	324	23	2	10,306
1	16	2	2	2	3	.	2	.	.	28
..	..			..	..			.	...	..
..	..		.	...	.	...	.	..		...
...		...		...	..	.		..	...	.
152	407	449	35	241	32	330	89	1	.	1,736
..			..			..		.	..	
	..	..	...	..		.	..	...	..	..
153	423	451	37	243	35	330	91	1	..	1,764

APPEN

CONTENTS OF

Diameter

Name of block	Number of compartments.	MORINDA										Total
		3″—6″	6″—12″	12′—18″		18″—24′		Above 24′				
								Green		*Dry*		
				Sound	Unsound	Sound.	Unsound	Sound	Unsound	Erect	Fallen	
Duliana	1	871	436	193	14	98	24	103	29	...	...	1,768
	2	7,054	3,564	932	47	299	41	183	30	2	2	13,054
	3	30	10	1	...	1		4	2	1		49
	4				Not valued				..			...
Total		8,955	4,010	1,126	61	398	65	290	61	3	2	14,871
Pandáwa	1	6,595	2,780	700	21	156	17	108	33		1	10,471
	2	11,852	4,324	1,397	15	450	23	187	21	3		18,212
	3	1	3						...			4
Total	...	18,448	7,107	2,127	36	606	40	295	54	3	1	28,687
Rikta	1	31	13	5	1	3		3	...			56
	2	124	63	21	1	12	1	3	4			229
	3	3,940	2,851	680	20	163	12	124	34		2	7,885
Total	...	4,095	2,927	715	22	178	13	130	38		2	8,120
Bajamára	1	5,364	3,702	940	71	230	43	81	31	2	1	10,471
	2		..		...				...			
	3	5,474	3,123	904	21	310	33	129	50	7		10,060
Total		10,838	6,825	1,844	92	546	76	210	90	9	1	20,531
Legúna	1		..						...		...	
	2		1				...		...		..	1
	3	11	2		...							13
	4	9,768	5,110	1,300	30	500	31	166	38	13	5	16,961
	5	6,306	2,576	1,071	16	359	17	131	60	9	3	10,508
	6	340	278	52	2	8	2	2	..		...	684
	7	1	2									3
Total	...	16,786	7,969	2,423	48	867	50	299	98	22	8	28,170
Konam	1								..			
	2											
	3	1,146	373	78	2	24	4	43	12			1,682
	4	366	156	48	2	4	6	9	4	..		595
	5	17	3			1	1		1			23
	6		...			...	...		...	...		
	7						...		..		...	
	8				...						...	
Total	...	1,529	532	126	4	29	11	52	17		...	2,300
Shári	1				...				...			
	2	115	70	23	10	2	5	2				227
	3	2 087	691	120	1	23	3	42	9			2,985
	4	9,768	5,555	1,419	24	279	14	370	40	6		17,475
Total		11,970	6,316	1,571	35	304	22	414	49	6		20,687
Gutugód	1	2,756	1,801	513	9	221	4	71	12	89	9	4,985
	2	9,463	3,974	1,264	33	394	35	264	65	89	33	15,619
	3	12	22	11		8	1	2	1	1	1	59
	4		...		..		...		...			
	5	2,099	431	100	2	40	3	16	5	1	1	2,698
	6	140	130	50	2	13		15	2	4	2	358
Total		14,470	5,858	1,938	46	676	43	368	85	184	51	23,719
Bhujkoti	1	2,188	1,011	409	14	188	14	60	18	14	5	3,987
	2	1,726	580	451	19	181	26	139	40	21	12	3,195
	3	2,635	1,750	1,178	75	583	69	324	74	40	14	6,751
Total		6,549	3,341	2,038	108	952	109	523	132	84	31	13,933
Karámba ..	1	2,094	1,587	657	11	234	21	137	55	9	2	5,407
GRAND TOTAL	..	164,861	79,775	28,757	1,286	9,987	1,204	5,354	1,701	465	141	293,531

DIX A.

COMPARTMENTS.

Classes)—(continued).

KARSHU.

3"—6".	6"—12".	12"—18".		18"—24"		ABOVE 24".				TOTAL.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
254	63	28	0	13	10	8	4			389
22	10	5		2			1			40
		Not valued.								
276	73	33	9	15	10	8	5			429
5,846	3,818	2,186	98	356	43	106	34		2	12,489
3,243	1,841	625	56	115	46	55	54			6,035
47	55	61	2	15	3	7	5			195
9,136	5,714	2,872	156	486	92	168	93		2	18,719
738	59	10	2	3	2	1	3			818
39	48	29	6	6	2	5				185
67	76	35	4	13	3	3	3			204
844	183	74	12	22	7	9	6			1,157
1,250	1,277	583	178	123	74	9	35			3,526
3,208	1,677	668	173	198	92	50	85			6,367
4,458	3,154	1,251	351	320	166	65	120			9,885
1,331	713	284	55	105	33	14	32	4	3	2,574
2,342	1,830	496	78	117	42	40	50	2	1	4,098
2,283	1,374	310	62	63	32	29	40	3	1	4,197
5,956	3,917	1,090	195	285	107	83	122	9	5	11,769
41	32	6	1	3	3	2	1			89
1,710	682	157	23	37	10	45	33		1	2,698
1,751	714	163	24	40	13	47	34		1	2,787
3,547	1,612	684	147	140	50	39	89	40	41	6,389
338	211	56	13	6	3	15	3	4	1	650
1	1	1								3
400	270	60	26	7	7	17	3		1	791
4,286	2,094	801	186	153	60	71	45	44	43	7,783
603	441	207	81	70	44	18	35	7	14	1,580
45	58	40	8	10	3	5	3		3	175
313	114	46	23	17	7	1	5	1	2	529
1,021	613	293	112	97	54	24	43	8	19	2,284
7,052	5,349	2,614	476	397	297	305	425	14	11	17,240
43,449	74,147	26,924	5,305	6,746	2,328	2,326	1,859	123	117	2,03,324

APPEN

CONTENTS OF

(*Diameter*

Name of block	Number of compartments.	MORU										Total
		3"—6"	6"—12"	12"—18"		18"—24".		ABOVE 24"				
								Green.		*Dry*		
				Sound	Unsound	Sound	Unsound	Sound	Unsound	Erect	Fallen	
Duliána ...	1	1,206	1,798	644	211	194	112	166	138	2	...	4,559
	2	524	840	385	142	128	56	77	58	...	..	2,208
	3	38	52	28	4	17	4	23	27	...	...	193
	4					Not	valued					
Total		1,858	2,684	1,057	360	339	171	266	223	2	...	16,960
Pandáwa	1	1,045	705	248	50	77	31	145	121	.	2	2,484
	2	516	745	332	55	175	56	118	107	...	..	2,104
	3	312	243	90	27	22	20	50	37		.	791
Total		1,873	1,743	670	132	274	107	313	265	..	2	5,379
Rikta	1	202	182	72	20	30	21	39	33		...	599
	2	206	251	106	47	58	45	38	72	...	...	823
	3	1,215	1,212	518	125	182	74	260	181	1	4	3,772
Total		1,623	1,645	696	192	270	140	337	286	1	4	5,194
Bajamára	1	370	397	121	77	54	53	21	69	1	1	1,144
	2	477	449	175	160	106	94	102	166	1	1	1,731
	3	198	223	80	13	24	15	26	43	1		623
Total		1,045	1,069	376	250	184	162	149	278	3	2	3,498
Legúna	1	7	21	3	1	2	2	2	2	.		40
	2	568	723	230	121	63	64	20	84	...	1	1,873
	3	158	208	59	48	20	17	10	9	...	...	529
	4	1,804	1,296	380	119	120	76	114	190	5	4	4,117
	5	126	133	40	20	13	5	9	17	4	...	373
	6	..	...	...	..		...	...		...		
	7	555	528	168	146	66	66	49	92	...	..	1,690
Total		3,218	2,909	880	461	284	240	204	394	9	5	8,622
Konaia	1	..		...	..	..	...			.	...	...
	2	21	24	1	3		...	.	1	...		50
	3	6	7		...	...		...	..	.	...	13
	4	206	203	36	20	6	8	10	11	.	...	500
	5	898	612	201	122	86	78	88	108	...		2,193
	6	188	163	57	57	30	25	24	34		...	608
	7	97	64	14	13	6	6	2	7	...	.	209
	8	3	...	..	...	...	.				..	3
Total		1,419	1,073	339	215	128	117	124	161	...		3,576
Karáh	1	4	15		2							21
	1a	111	147	18	28	4	8	...	3		..	319
	2	28	8	2	3	1						42
	3	8	6		2		.		.	...		16
	4			...	..	..	..		.	...		
Total		151	176	20	35	5	8		3	..	...	398
Siári	1	61	65	42	15	8	11	13	15		...	230
	2	205	179	45	25	29	22	29	38			572
	3	3,010	2,018	635	212	204	145	289	346	4	1	6,899
	4	241	170	23	8	7	2	11	9	1		472
Total		3,517	2,427	745	260	308	180	342	388	5	1	8,173
Gutugád	1	50	25	15	1	2	3	1	...	2		99
	2	956	576	220	22	85	23	100	54	14	14	2,073
	3	1,077	1,150	551	71	340	101	252	200	17	5	3,773
	4	21	34	25	3	2	1	2		...		88
	5	1,006	501	252	32	174	30	221	92	3	1	2,312
	6	178	162	75	15	31	12	54	53			580
Total		3,288	2,448	1,147	144	643	170	630	399	36	20	8,925
Bhujkoti	1	5	..				.			...		5
	2	2,851	887	661	178	295	104	220	170	1		5,367
	3	1,277	607	280	79	103	38	91	77	7		2,559
Total		4,133	1,494	941	257	398	142	311	247	8		7,931
Kanámba	1	21	17	9	2	3	2	1	5		1	61
GRAND TOTAL	..	75,671	55,353	33,319	11,111	11,544	6,130	8,777	7,478	257	119	239,759

DIX A.

COMPARTMENTS

Classes)—(continued)

BÂN

3' 6"	5'—12"	12"- 18"		18"—24"		Above 24"				Total
						Green		*Dry*		
		Sound	Unsound	Sound.	Unsound	Sound	Unsound	Erect	Fallen	
1,177	831	380	22	123	16	132	21	2	1	2,705
14	10	10	2	5	1	3	1			46
..		...	..	..	..			..		.
				Not valued						
1,191	841	390	24	128	17	135	22	2	1	2,751
3	10	3		3		10	1			30
795	531	272	20	73	12	157	28	3	1	1,901
798	541	275	20	76	12	167	29	3	1	1,931
	..									
55	116	... 33	5	... 15	... 4	47	11	..	..	286
55	116	33	5	15	4	47	11	...	...	286
						1				1
34	.. 43	... 27	2	36	... 7	39	17	... 1	.	206
	.	1		.				...		1
34	43	28	2	36	7	40	17	1	...	208
35	222	72	15	47	23	63	42	...	2	521
271	614	302	40	129	22	61	27	1	...	1,467
144	370	104	37	71	35	105	55	2	...	923
40	39	31	1	17	3	25	11	...	1	168
2	9	10	...	5	1	12	2	...		41
					...		..			
35	72	41	3	14	10	7	5		..	187
527	1,326	590	96	283	94	273	142	3	3	3,307
9	9		...	...	...		...			18
41	60	19	3	4	5	7	1			140
4	16	9	9	2	1	1	1		..	43
4	2	..							..	6
80	88	36	11	13	4	... 23	13	.		269
52	67	51	2	26	4	27	5	...	...	234
305	358	110	17	53	22	41	55	.		1,021
33	73	14	2	12	4	16	12		..	166
588	673	289	44	110	40	115	87	..	...	1,996
65	202	105	20	48	11	26	14	.	...	581
613	1,350	484	90	102	45	98	70	.	.	2,951
335	1,088	395	70	138	40	53	34	1	..	2,154
551	797	362	93	153	37	78	41	1		2,111
212	*850	510	83	152	68	77	8*	2	1	1,996
1,770	*2,395	1,856	356	683	201	827	194	4	1	9,798
66	130	144	10	194	15	300	82	2		884
9	16	9		18	4	16	6			78
11	12	8		2	1	1				30
								...	..	
86	158	155	10	154	20	317	88	2		990
..		...	...	.		.			..	..
..		..	..					..	...	..
128	465	748	121	501	71	411	68	7	1	2,541
292	449	442	59	172	53	175	53	1	...	1,696
99	121	157	17	111	12	112	33	1		668
.	3	2		2	1	5	4			17
519	1,038	1,349	197	786	137	703	158	9	1	4 897
95	253	256	27	112	37	121	40		.	941
								...		
95	253	256	27	112	37	121	40	...		941
				..	..		..			
66,754	85,886	40,229	5,836	16,662	3,032	16,248	5,615	264	126	241,551

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	BURÁNS										Total.
		3″—6″.	6″—12″.	12″—18″.		18″—24″.		Above 24″				
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Kua ...	...	428	833	513	244	302	198	242	314	1	...	3,070
Singori ...	1	1,454	3,029	769	411	231	238	64	181	...	2	6,379
	2	723	1,550	484	246	118	104	31	47	...	...	3,298
Total ...	...	2,177	4,579	1,253	657	344	342	95	228	..	2	9,677
Kotlu ...	...	10,154	9,009	224	12	8	2	...	...	... ...	...	19,409
Bándla ...	...	1,093	1,659	143	26	10	5	...	...	... ...	.	3,936
Kurwa ...	1	2,064	1,612	111	41	6	7	3	2	...	...	3,846
	2	3,593	1,584	54	23	4	2	...	2	...	...	5,262
Total ...	...	5,657	3,196	165	64	10	9	3	4	...	...	9,108
Raura ...	...	204	358	103	102	48	59	17	20	...	1	912
Inári ...	1	31	78	18	18	2	4	...	. .	...	...	151
	2	662	574	76	40	5	7	...	2	...	...	1,375
	3	50	106	11	4	1	1	...	1	...	...	174
	4	137	379	66	94	18	15	1	3	...	...	713
	5	285	622	97	84	17	40	7	18	...	1	1,171
Total ...	...	1,165	1,759	268	240	43	67	8	24		1	3,584
Bodiár ...	1	.	27	2	3	6		4	1	...	...	43
	2	31	69	16	5	2	3	4	3	...	...	133
	3	3	40	15	1	8	6	3	3	1	...	80
	4	23	224	94	41	54	23	28	14	...	...	501
	5	12	55	9	2	10	5	...	2	...	...	95
	6	14	14	..	3	4	1	...	...	. .	...	36
	7	...	...	...	...	...	1	...	...	...	...	1
Total ...	...	83	429	136	55	84	39	39	23	1	...	889
Moila ...	1	70	61	5	1	...	...	...	..	...	...	137
	2		...	...	...	...	...	...	...	...	...	...
	3	7	6	...	...	...	...	...	...	2	1	17
	4	...	..	...	...	...	...	...	. .	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	...	..	..	...	...	...	...	...
	7	4	7	...	...	...	..	...	...	...	...	11
	8	...	...	...	...	...	...	...	...	...	...	...
	9	...	...	...	..	...	...	...	...	...	...	...
Total ...	...	81	74	5	1	...	...	...	1	2	1	165
Miasru ...	1	...	...	...	..	...	...	...	...	...	...	...
	2	31	50	7	5	1	2	3	...	1	...	106
	3	43	28	3	1	3	1	...	...	...	...	79
	4	79	140	10	27	6	7	1	8	...	...	278
	5	34	57	21	6	8	11	5	4	...	...	146
	6	3	41	7	6	7	6	...	3	...	...	78
	7	5	23	9	5	3	...	...	...	...	...	45
Total ...	...	195	345	57	50	28	27	9	16	...	...	727
Chitri ...	1	3	..	...	...	...	...	...	...	...	...	3
	2	3	4	1	..	...	...	...	...	...	...	8
	3	83	46	5	6	...	...	...	...	...	...	140
Total ...	...	89	50	6	6	...	...	...	...	...	...	151
Kanáwar ...	...	46	38	18	17	1	11	2	7	...	...	140

DIX A.

COMPARTMENT.

Classes)—(continuod).

AYAH.

3"—6".	5"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
305	278	52	37	6	10	1	...	..	..	689
730	575	48	11	...	3	...	...	...	...	1,376
795	713	54	17	2	2	...	1	...	...	1,584
1,584	1,288	102	28	2	5		1	...	...	2,960
2,427	1,202	30	...	1	...	...	...	...	...	3,730
1,872	1,098	50	1	1	1	...	...	...	...	3,023
1,769	1,151	8	...	..	...	...	...	...	...	2,928
1,079	552	23	2	...	...	...	...	...	...	1,656
3,848	1,703	31	2	...	...	...	..	...	...	4,584
314	505	162	55	45	15	7	8	...	...	1,111
19	19	2	4	...	...	...	...	...	...	44
136	123	3	6	1	1	...	...	...	...	270
69	88	3	1	..	...	...	...	...	...	111
48	19	4	6	...	...	...	...	...	...	77
54	201	17	5	2	1	...	..	...	...	280
326	400	29	22	3	2	...	...	...	...	782
1	1	...	..	...	...	...	...		...	2
...	1	...	...	...	.	...	...	...	...	1
1	5	1	...	2	1	..	...	...	...	10
57	77	36	12	20	10	16	10	...	...	238
99	10	4	1	2	.	1	2	.	...	119
5	3	...	.	.	...	2	...	...	...	10
2	...	...		...	...	1	...	...	...	3
185	97	41	13	24	11	20	12	...	...	383
111	63	5	1	...	...	...	...	...	...	180
15	30	...	...	1	...	...	...	...	...	44
5	2	.	.	.	...	...	...	...	...	9
...	.	.	...	...	...	...	1	1	...	
.	.	...	...	...	...	..	...	...	...	...
...	...	...		...	...	.	...	...	...	...
...	..	...	...	...	...	.	...	...	...	...
8	1	...	...	...	...	...	...	...	..	...
2	1	...	...	...	...	...	...	...	...	9
						..	..	...	...	3
189	97	5	1	1	...		1	1	...	245
...	...	...	..	...	...	...	...	...	...	...
20	4	1	..	1	...	...	...	...	...	26
85	45	.	1	...	2	..	..	...	...	183
93	87	6	3	1	..	..	...	...	...	190
102	265	13	4	9	...	...	...	...	...	485
89	82	14	3	1	1	..	1	...	...	190
62	122	28	12	3	1	..	..	...	...	227
541	605	62	23	15	4	...	1	...	...	1,251
149	155	20	4	2	...	...	...	...	...	330
106	73	12	6	2	...	...	...	...	...	199
2	5	...	...	...	...	..	...	...	...	7
257	233	32	10	4	...	...	...	...	...	536
219	42	6	4	...	...	1	...	...	...	272

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	KUKAT.										
		3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Kua ...	...	20	26	5	7	...	2	...	...	...	...	60
Singori ...	1	142	132	7	3	...	...	...	...	...	...	284
	2	35	21	4	1	...	...	...	...	..	...	61
Total ...	...	177	153	11	4	...	...		...	...	...	345
Kotha ...	..	737	267	6	4	...	1	...	...	...	...	1,015
Bándla ...	...	993	506	31	21	2	...	...	...	...	...	1,553
Kurwa ...	1	1,362	638	13	9	...	...	...	. .	...	...	2,022
	2	154	54	...	...	...	...	...	...	...	...	208
Total ...	...	1,516	692	13	9	...	...	...	...	...	...	2,230
Raura ...	...	288	237	26	20	4	2	3	2	...	...	582
Lukri ...	1	93	190	31	6	3	7	...	1	...	...	321
	2	1,339	1,066	81	72	17	9	2	4	...	...	2,590
	3	147	304	37	21	2	5	...	5	...	...	521
	4	438	614	43	39	6	7	3	1	...	...	1,141
	5	283	340	12	22	1	5	...	2	...	...	671
Total ...	...	2,300	2,510	204	150	29	33	5	13	...	...	5,244
Bodlár ...	1	338	110	4	4	3	.	1	3	...	. .	463
	2	1,040	468	34	12	5	6	1	6	..	...	1,566
	3	129	125	18	1	3	1	1	1	...	...	279
	4	178	227	25	21	14	8	8	0	...	...	482
	5	332	228	16	16	1	6	...	1	. .	...	600
	6	270	179	21	15	5	3	1	2	...	...	496
	7	36	47	20	7	1	5	2	.	..	...	118
Total ...	...	2,318	1,379	138	76	32	29	14	18	...	...	4,004
Molla ...	1	3,048	1,262	302	52	34	11	18	6	9	4	4,741
	2	150	559	53	20	4	1	1	...	...	...	788
	3	1,092	909	267	38	35	26	42	3	2	1	3,015
	4	34	8	1	...	...	...		.	1	...	44
	5	55	13	.	...	...	...	...	.	...		68
	6	163	35	2	3	...	...	...	...	...	. .	203
	7	1,050	252	80	30	13	8	11	7	...	. .	1,450
	8	1,401	344	35	7	4	..	7	1	...	...	1,799
	9	798	140	52	15	2	...	1	1	...	...	1,009
Total ...	...	8,391	3,522	792	174	92	46	75	18	12	5	13,127
Missau ...	1	28	22	...	2	3	1	1	..	...	...	57
	2	536	246	16	11	2	3	...	4	...	...	818
	3	1,550	398	17	14	...	3	1	1	...	...	1,974
	4	1,065	204	17	17	1	1	1	3	.	...	1,309
	5	298	243	35	19	. .	2	6	. . .		...	603
	6	642	281	05	19	6	1	17	8		...	1,039
	7	160	84	23	7	5	2	2	...	...	. .	283
Total ...	...	4,279	1,558	173	89	17	13	28	16		...	6,178
Chátri ...	1	41	44	6	...	...	2	2	1	.	...	96
	2	1,028	698	110	50	22	6	19	6	...	...	1,030
	3	276	360	13	58	...	12	16	5	...	...	740
Total ...	...	1,345	1,108	120	108	22	20	37	12	...	...	2,781
Kandsar ...	...	230	69	5	4	2	1	1	1	...	...	313

DIX A.

COMPARTMENTS.

classes) – (continued).

LEORI

3"—6"	6"—12"	12"—18"		18"—24"		Above 24"				Total
						Green		*Dry*		
		Sound	Unsound	Sound	Unsound	Sound	Unsound	Erect	Fallen	
		...	...	...			..		..	..
...	..		...	.	...			...		
			...		...	.	...	...	.	...
	.		.	.			...	...		
		..		...	..	...			...	
				...		...	...		.	. .
				..	.	...	...	...	...	..
...						.		...		..
				..	..		.		...	...
40	72	55	8	21	17	12	7		1	233
91	115	38	7	6	6	9	7	...	.	276
18	22	3	6	.	1		3	. .	...	53
..		...		...	...	...		. .	...	...
...					.		.	.	..	...
149	209	96	21	27	24	18	17		1	562
9	7	4		3	...	12		. .	...	35
						. .	...		...	...
11	3	7	.	1	.	1		..		23
3	1	3	...	2	...	1		...	...	10
57	40	29	1	14		12	1	..	. .	103
20	32	12		1		4	...	...		69
181	45	16	3	13	5	42	2	2		309
281	137	71	4	34	5	. 72	3	2		609
360	354	198	22	10	13	61	13	4	3	1,038
281	234	251	20	95	13	68	24	13	1	995
646	535	312	60	208	34	190	35	19	75	2,114
200	230	193	9	72	12	33	12	13	6	780
160	178	94	68	10	67	24	2		..	601
389	207	106	7	38	8	41	13	2		810
294	228	117	3	30	3	17	6	1	. 2	701
260	201	131	5	48	2	27	7	1	...	691
47	30	17	4	5	2	6	1	1	...	116
2,646	2,198	1,419	198	516	154	462	112	54	87	7,846
136	104	52	6	25	4	35	7	1	..	370
599	647	348	8	220	39	264	28	6	3	2,162
211	164	53	1	33	1	13				476
	.						..			.
	.			..			...			...
	4			...	.	2	. .		...	6
17	38	14		4	1	1	...		...	75
963	967	467	15	282	45	315	35	7	3	3,089
...	...					...	...	...	. .	...
			..		..	...			.	...
.	.		...		..				...	...
..	...	.				..	.		..	.
.		..		.	...		..	.	...	...

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartment.	BURÁNS. 3″—6″.	6″—12″.	12″—16″. Sound.	12″—16″. Unsound.	16″—24″. Sound.	16″—24″. Unsound.	ABOVE 24″. *Green.* Sound.	ABOVE 24″. *Green.* Unsound.	ABOVE 24″. *Dry.* Erect.	ABOVE 24″. *Dry.* Fallen.	Total.
Kopti ...	1	...	...	...	...	..	...	...	...	...	..	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	.	...	...	...	...	..	...	...	...	...	...
	4	1	5	5	1	2	2	...	...	...	...	16
Total		...	1	5	5	1	2	2	...	...	...	...	16
Asnári ..	1	..	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	..	...	...	...	...	...	...	...
	3	..	...	...	...	...	...	...	. .	...	...	...
Total ...		...	...	...	...	...	...	...	...	...	...	...
Maranwa ...	1	58	36	30	12	4	2	1	7	...	...	150
	2	24	65	43	7	2	.	...	...	...	...	141
	3	...	1	1	...	.	...	..	...	...	...	2
	4	1	10	5	2	3	1	2	...	...	...	24
	5	5	10	...	..	...		...	...	...	...	15
Total ...		...	88	122	79	21	9	3	3	7	...	...	332
Thona ...	1	...	...	...	...	...	...	...	...	...	..	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	..	.	...	...	...	...	...
	4	30	21	5	2	2	2	...	2	...	...	64
Total ...		...	30	21	5	2	2	2	...	2	...	...	64
Kutuiár ...	1	1	10	...	...	...	...	...	...	...	...	11
	2	...	...	...	...	...	...	...	...	...	...	...
Total ...		...	1	10	...	...	...	.	..	...	...	...	11
Kanjátra ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	..	...	...	...	...	...	...	...	...	...	...
	3	1	...	...	...	...		...	...	...	...	1
	4	32	78	12	2	...	2	..	...	...	...	121
	5	..	...	.	..	...	...	...	...	...		...
Total ...		...	33	78	12	2	...	2	...	...	...	...	122
Jádi ...	1	133	165	18	7	2	5	...	2	...	...	...	330
	2	41	64	7	2	1	..		1	...	...	...	118
	3	11	16	8	1	1	.	1	...	.	..	..	38
	4	6	5	...	...	1	..	.	...	...	..	..	12
	5	..	..	...	...	...	...	...	...	...		...	...
	6	...	...	...	...	...	...	...	...	...	...	...	...
	7	.	...	..	...	...	...	...	...	...	...	...	...
	8	...	...	...	...	...	...	...	..	...	...	...	...
	9	...	...	...	..	...	..	...	...	...	...	...	..
Total ...		...	191	250	33	10	5	5	3	1	..	...	498
Dárna ...	1	925	1,910	383	104	57	49	21	25	...	.	..	3,473
	2	265	900	243	168	77	78	25	64	...	..	..	1,820
	3	78	198	57	52	21	24	16	24	3	.		473
	4					Not valued.							
Total ...		...	1,208	3,008	682	324	155	151	62	113	3	...	5,766
Matkángra ...	1	7	8	..	..	...	.	1	1	..	...	...	17
	2	97	370	148	25	40	10	16	23	...			733
	3	1,601	2,050	482	103	183	70	78	98	...	. .		4,665
	4	78	115	94	10	48	14	28	14	...	...		396
	5	442	560	146	34	50	13	18	9	...	...		1,272
Total ...		...	2,220	3,103	865	172	321	116	141	145	...	...	7,083

DIX A.

COMPARTMENTS.

classes)—(continued).

AYÁR.

3″—6″.	6″—12″.	12″—18″.		18″—24″.		Above 24″.				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
...	.	..	..	...	.	...	...	...	...	...
...	...	...	...	...	...	...	..	...	...	...
4	..	...	...	...	...	...	..	...	...	4
50	38	10	2	7	1	2	3	...	...	122
54	38	10	2	7	1	2	3	..	...	126
...	...	..	...	...	...	...	...	...	...	...
..	5	1	...	...	...	...	...	6	...	6
...	...	...	...	...	...	...	...	...	...	...
...	5	1	...	...	...	...	...	...	...	6
124	33	11	4	...	1	...	...	...	...	173
28	86	32	1	5	...	10	...	...	...	102
4	3	1	1	...	...	...	...	...	...	9
6	8	..	...	1	...	...	1	...	...	16
26	42	3	...	...	...	...	...	...	...	71
188	172	47	6	6	1	10	1	...	...	431
...	...	...	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	...	...	...
9	1	2	1	...	1	...	...	...	...	14
25	13	4	2	...	1	...	...	...	...	45
34	14	6	3	...	2	...	...	...	...	59
...	...	...	..	...	...	...	...	...	...	...
...	...	..	...	...	...	...	...	...	...	...
..	...	...	..	...	...	...	..	...	...	...
...	...	...	..	...	...	...	...	...	...	...
...	..	...	...	...	...	..	...	...	...	..
..	...	2	...	...	...	..	...	...	...	2
10	4	...	...	...	...	...	...	...	...	14
...	...	...	...	...	...	..	...	...	...	...
10	4	2	...	...	...	...	...	...	...	16
23	35	22	4	2	...	...	...	...	...	86
4	1	...	..	...	...	..	.	...	...	5
.	1			.	...	...	...	...	...	1
8	6	...	...	..	..	...	.	...	...	14
...	...			...	...	...	...	...	...	...
...	1	..	...	...	...	...	...	...	...	1
...	...	...	1	...	...	...	...	...	..	...
.	...	...	...	...	...	...	...	..	...	...
	...	...	...	...	...	...	...	...	...	...
35	44	22	4	2	...	...	...	...	...	107
48	77	19	4	3	...	...	..	...	...	151
156	263	45	17	10	4	1	1	...	...	497
46	118	27	7	4	..	1	...	...	...	203
				Not valued.						
250	458	91	28	17	4	2	1	...	...	851
5	2	3	...	1	...	..	...	...	..	11
350	123	38	1	6	3	1	1	...	..	523
1,115	730	211	57	40	15	18	8	.	..	2,201
33	73	23	3	6	4	1	...	...	..	146
73	78	35	3	4	...	...	...	...	...	193
1,579	1,012	310	64	63	22	15	9	...	...	3,074

APPEN

CONTENTS OF

(*Diameter*

Name of block	Number of compartments.	KUKAT										Total.
		3′—6″	6″—12″	12′—18′		18′—12′		ABOVE 24′				
								Green		*Dry*		
				Sound.	Unsound.	Sound	Unsound	Sound	Unsound	Erect	Fallen	
Kopti ..	1	284	105	9	5	3	1					406
	2	145	41	2						..		188
	3	34	12			...						46
	4	72	18	1						..		91
Total ...		534	176	12	5	3	1					731
Asmári	1	49	12					.				61
	2	12	19					..				31
	3	46	57					..			...	103
Total		107	88				..					195
Marauwa ..	1	245	77	15	6	4		3	3			353
	2	394	184	70	15	5	1	14	1	.		634
	3	40	32	6	1	6		1	2			88
	4	78	50	38	1	10	1	1				180
	5	84	54	3	1	2						144
Total		830	353	132	24	27	2	19	6			1,399
Thona	1	14	3	1				.	..	.		18
	2	102	17									179
	3	505	179	19	5	4	3	3	4			723
	4	1,068	360	54	31	32	12	46	16	1	.	1,620
Total .		1,749	568	74	36	36	15	49	20	1		2,548
Kutnar .	1	182	88		1		.					271
	2	27	6									33
Total		209	94		1							304
Kanjátra	1	67	37						..	..		104
	2	197	39	9	.			1	1			181
	3	696	398	170	37	103	23	54	31	3	..	1,515
	4	2,225	1,589	163	66	50	22	22	15			4 152
	5	247	39	3					..			289
Total .		3,372	2 102	339	103	153	45	77	47	3		6,241
Jádi ...	1	1,431	2,240	340	105	70	37	36	20			4 288
	2	288	157	18	22	2	3		1	..		491
	3	141	48	3								192
	4	437	134	25	3	1	4	..				604
	5	607	18			..						625
	6	351	17	..								368
	7	1,387	112	5	..							1,504
	8	53	3	1				.		2	..	59
	9	598	28	5	..		1	4	..		..	636
Total ..		5,293	2 706	317	130	73	45	40	21	2		8,767
Darna .	1	2,710	3,193	340	200	42	66	16	28		..	6 595
	2	422	843	63	58	5	6	1	2		1	1,401
	3	898	1,469	412	157	101	49	38	25			3,149
	4							Not valued				
Total .	..	4,040	5,505	815	415	148	121	55	55		1	11 145
Matkángra ...	1	96	133	37	6	11	3	4	4			294
	2	1,718	1,708	187	49	10	9	14	2		..	3,697
	3	3,124	2,148	242	88	47	31	19	15			5,704
	4	310	309	62	9	22	12	13	10			747
	5	346	235	57	16	8	3	3	2			670
Total		5,594	4,523	585	168	98	58	53	33	.	..	11,112

DIX A.

COMPARTMENTS.

clauses)—(continued).

LEORI

3"—6".	6"—12	12"—18.		18"—24.		Above 24"				Total.
						Green		Dry		
		Sound	Unsound	Sound	Unsound	Sound	Unsound	Erect	Fallen.	
18	23	11		9		2				64
1		1		1	...					3
	...		...							
						...	...			
10	23	12		10	...	2			..	66
...										
...										
..	..			...	...		...	...	..	...
	...				1*	1*		...	...	2*
				...						
..			..		...	..			..	
4	1	...		...		..		...		5
4	1	...		1	1	...				5
		...		..		...				
...	..	...					...	...		
...						...	...			
11	10	6		2		2	...		...	31
11	10	6	..	2		2				31
1	2	1		...			...	...		4
										...
1	2	1		..		..				4
	...									...
			...					...	...	
	...	...						...	...	
		...								
			...							
20	27	9							...	56
37	26	6	..	1		...				70
34	71	2		2	...			..	...	108
39	89	11	..		...	...	..			109
		...			...		...			
	...					...				
								..	...	
2	...	...		...		...	...	...		2
	..	..			...					
132	183	28		3						346
		...	...					...		
				Not	valued					
									...	
37	29	5		2						73
...				..			..		..	...
		..				..				
	...				.		...		..	
37	29	5		2	..	...	..	..	..	73

* These are walnut trees.

APPEN

CONTENTS OF

(*Diameter*

Name of block.	Number of compartments.	BURÁNS.										Total.
		3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Molma ...	1	574	170	23	8	8	2	1	...	...	...	786
	2	4	7	1	...	1	...	..	..	...	...	13
	3	473	520	210	72	69	43	25	50	2	1	1,471
	4	...	...	...	...	...	...	...	..	...	...	...
	5	...	...	...	...	...	...	..	...	...	.	
	6	9	3	2	1	3	...	..	...	...	...	17
	7	...	1	2	...	...	...	.	...	. .	...	3
	8	5	5	5	...	...	1	...	...	...	...	16
	9	14	18	4	5	5	1	3	1	..	...	51
	10	.	...	..	...	...	...	.	.	...	...	...
	11	2	2	...	...	...	...	...	...	...	...	4
	12	...	...	...	...	...	...	...	...	...	...	...
	13	..	...	...	...	...	...	...	...	...	...	...
	14	10	5	...	...	...	...	...	...	...	...	15
Total .	...	1,001	730	253	86	86	47	29	51	2	1	2,376
Durávi ...	1	7	7	2	...	2	1	...	1	...	...	20
	2	17	10	8	4	2	1	1	1	...	...	44
	3	.	1	2	1	...	...	...	...	...	...	4
	4	3	5	3	...	1	...	...	...	...	...	12
	5	...	...	...	...	...	...	...	...	...	...	...
	6	.	...	...	...	...	...	...	...	...	...	...
Total ...	...	27	23	15	5	5	2	1	2	...	...	80
Bira ...	1	569	899	150	30	23	12	9	4	...	...	1,696
	2	1,080	551	10	...	1	...	...	...	...	...	1,642
	3	60	39	13	...	. .	...	..	...	...	...	121
	4	3,160	2,213	490	46	93	18	8	3	...	...	6,021
	5	485	531	115	19	17	11	4	3	...	...	1,185
	6	1,589	1,729	287	41	33	6	3	1	...	.	3,689
Total ...	...	6,902	5,952	1,055	136	167	47	24	11	...	...	14,204
Kulered ...	1	2,216	2,412	760	61	108	11	14	5	...	.	5,587
	2	960	376	36	1	5	..	.	...	.	...	1,378
	3	983	722	37	...	1	.	...	.	..	..	1,743
	4	191	299	31	4	11	3	4	3	1	...	547
	5	365	824	282	32	85	12	29	8	...	...	1,637
	6	918	1,031	250	21	57	14	10	8	...	...	2,909
Total. ...	...	5,633	6,264	1,396	119	267	40	57	24	1	.	13,801
Amlokvi ..	1	2,022	1,899	687	170	221	89	95	66	2	1	5,251
	2	253	581	260	38	44	18	37	7	...	..	1,233
	3	227	220	98	14	32	6	15	3	...	...	610
Total ..	...	2,502	2,700	1,040	226	297	113	147	76	2	1	7,104
Dánda ...	1	3,778	4,712	878	167	124	42	36	10	6	1	9,754
	2 & 3	356	1,219	632	174	134	68	29	12	1	...	2,625
Total .	...	4,134	5,931	1,510	341	258	110	65	22	7	1	12,379
Hajáwa ...	1	65	66	26	5	...	1	1	...	..	..	164
	2	1	1	1	...	.	...	...	...	.	...	3
	3	...	.	.	...	...	...	...	...	..	.	.
	4	...	...	...	...	...	...	...	...	...	.	..
	5	530	1,561	449	39	112	20	53	20	.	...	2,793
	6	..	...	...	...	...	...	...	.	...	...	...
	7	...	.	...	.	...	...	..	...	...	...	..
Total ..	...	596	1,628	476	44	112	30	54	20	...	...	2,960
Duliána ...	1	479	229	59	17	20	11	6	11	1	...	833
	2	7	...	...	...	...	...	...	...	...	...	7
	3	...	...	...	...	...	...	...	.	...	...	...
	4					Not valued.						
Total .	...	486	229	59	17	20	11	6	11	1	...	840
Pandáwa ..	1	...	...	..	...	...	...	..	..	...	...	...
	2	28	19	4	...	...	1	...	1	...	...	57
	3	194	137	29	8	7	4	1	3	...	...	383
Total ...	...	222	156	33	8	7	5	1	4	...	...	440

DIX A.

COMPARTMENTS.

classes.—(continued).

AYÁR.

3″—6″.	6″—12″.	12″—18″.		18″—24″.		ABOVE 24″.				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
84	59	7	1	2	1	...	.	...	...	154
9	5	4	.	...	.	.	.	...	...	18
490	276	71	20	20	7	6	5	. .	. .	895
...	...	...	...	...	...	..	...	...	...	.
...	...	...	...	...	...	...	...	. .	...	..
16	...	...	...	...	...	...	.	...	.	16
7	...	...	...	...	.	...	.	.	...	7
42	8	1	1	2	...	2	.	.	...	56
29	29	5	2	6	2	1	1	...	...	75
..	..	..	...	..	...	...	...	...	...	...
.	2	...	...	...	...	..	..	...	...	2
...	..	..	.	...	...	..	...	...	...	...
..		...	..	...	...	...	..	..	...	...
6	12	1	..	1	...	...	.	...	...	20
683	391	89	24	31	10	9	6	...	..	1,243
4	9	3	.	..	...	...	...	...	...	16
4	8	1	1	...	...	.	.	..	...	9
10	4	...		...	...	...	1	...	...	15
11	15	...	...	...	...	...	...	...	...	26
...	...	...	..	...	...	.	...		...	...
...	...	...	...	...	...		...	..	..	...
29	31	4	1	..	...	...	1	...	.	66
268	371	56	4	10	1	2	1	...	...	713
239	142	3	...	...	...	...	...	...	...	384
15	6	1	1	1	...	...	...	...	...	24
762	570	100	10	8	2	2	...	...	...	1,454
192	157	18	10	4	1	1	...	...	...	383
1,313	707	53	5	3	...	1	...	...	..	2,082
2,789	1,953	231	30	26	4	6	1	..	...	5,040
981	771	129	6	4	1	...	.	...	...	1,892
280	126	6	...	.	..	..	..	...	...	412
280	104	4	.	..	...	...	...	...	...	448
78	97	14	2	...	...	.	...	...	...	186
232	265	41	9	8	3	2	1	...	...	561
458	583	71	7	6	.	1		...	...	1,126
2,304	2,006	265	24	18	4	3	1	.	.	4,625
922	922	217	27	24	7	6	2	...	...	2,127
126	451	189	24	21	3	14	3	...	..	834
152	95	19		1	3	1			...	271
1,200	1,468	425	51	46	13	21	5	.	.	3,229
2,653	2,557	334	12	30	...	12	1	2	..	5,601
357	537	153	12	22	3	3	1	...	...	1,088
3,010	3,094	487	24	52	3	15	2	2	...	6,689
10	5	2	1	...	...	...	...	...	..	18
..	...	...	..	.	...	...	...	...	...	...
..	...	..	...	...	...	.	.	.	...	...
...			...		...	.	.	.	..	..
523	637	182	6	22	1	3	..	...	...	1,174
...	...	...	...	.	...	. .	.	...	...	...
.	..			...	...	...	..	...	...	...
533	642	184	7	22	1	3	.	.	.	1,192
276	120	28	19	7	6	4	1	...	..	461
...	...	.	..	...	...	...	...	...	...	...
..	...	..	...	...	...	...	...	...	..	...
				Not valued.						
276	120	28	19	7	6	4	1	...	..	461
1	2	..	...	.	...	...	...	..	...	3
15	28	2	1	..	2	...	...	.	...	48
128	76	12	2	1	...	1	...	...	...	220
144	101	14	3	1	2	1	...	...	...	286

APPEN

CONTENTS OF

(*Diameter*

Name of block.		Number of compartments.	KUKAT.										Total.
			3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				
									Green.		*Dry.*		
					Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Mulma	..	1	483	256	37	33	2	2	..	...	...	...	813
		2	176	174	39	4	2	2	...	...	...	...	397
		3	2,164	1,415	413	136	97	28	25	19	1	1	4,299
		4	169	19	6	...	2	...	1	1	...	...	198
		5	121	35	2	...	...	...	...	...	...	...	158
		6	412	148	9	4	1	2	...	...	...	...	576
		7	209	55	1	2	...	...	...	...	...	...	267
		8	372	103	5	3	...	...	1	...	...	...	484
		9	246	95	11	4	2	1	..	...	...	...	350
		10	925	176	13	5	3	2	2	..	...	...	1,126
		11	201	41	3	2	3	...	...	..	...	...	253
		12	2,086	819	65	10	9	2	3	4	...	...	2,998
		13	380	107	31	4	1	2	1	...	...	...	625
		14	108	44	1	2	...	...	...	...	...	...	155
Total	...	...	8,001	3,580	636	209	122	41	38	24	1	1	12,708
Durání	...	1	1,042	244	61	7	26	5	5	4	2	...	1,396
		2	977	428	98	26	25	4	20	7	...	...	1,585
		3	304	171	16	1	1	..	1	...	1	...	495
		4	751	344	19	5	1	...	1	...	2	...	1,123
		5	6,084	1,426	203	37	27	8	25	9	6	2	7,827
		6	1,159	293	63	9	10	2	7	6	4	1	1,554
Total	...	...	10,317	2,906	460	85	90	19	59	26	15	3	13,980
Ekra	...	1	784	888	190	103	38	31	10	24	...	...	2,042
		2	435	254	13	11	1	2	...	...	...	...	705
		3	263	136	35	13	4	1	5	4	...	...	461
		4	3,400	1,704	247	116	61	44	19	16	...	...	5,607
		5	1,575	409	29	2	7	2	1	...	...	...	2,025
		6	1,947	405	50	6	4	1	1	...	...	...	2,414
Total	...	...	8,364	3,886	573	251	110	81	36	44	...	..	13,345
Kulcred	...	1	1,231	754	181	91	45	22	18	34	...	...	2,376
		2	763	409	64	15	11	7	7	3	...	...	1,269
		3	2,149	1,334	285	79	98	44	83	43	2	...	4,617
		4	287	152	18	17	5	3	1	...	..	...	483
		5	1,076	917	124	31	28	9	8	4	...	...	2,797
		6	2,541	711	26	9	7	2	4	2	...	...	3,302
Total	...	...	8,037	4,777	698	242	194	87	121	86	2	..	14,844
Amlokri	...	1	3,587	1,958	465	82	90	23	48	13	...	3	6,279
		2	1,588	1,414	542	44	72	10	75	24	14	1	3,714
		3	820	565	233	14	54	10	14	5	...	...	1,715
Total	...	...	5,985	3,937	1,240	140	216	43	137	42	14	4	11,708
Pánda	...	1	4,155	2,596	375	48	35	4	23	10	...	...	7,186
		2 & 3	2,401	1,174	391	57	108	10	49	16	...	...	4,206
Total	...	...	6,556	3,710	766	105	143	14	72	26	...	...	11,392
Majáwa	..	1	648	190	44	2	6	4	1	3	...	...	898
		2	395	51	13	5	4	3	...	...	...	...	471
		3	2,259	371	41	10	5	6	1	4	...	...	2,697
		4	683	191	36	16	2	...	3	...	...	...	931
		5	1,499	934	97	20	26	6	7	4	...	...	2,593
		6	4,186	176	2	...	...	...	...	...	...	...	4,364
		7	1,005	176	18	5	3	...	1	2	...	...	1,210
Total	...	...	10,675	2,089	251	58	46	19	13	13	...	..	13,161
Dulkána	...	1	3,186	829	112	30	22	8	7	8	...	...	4,211
		2	1,702	459	31	21	11	8	6	8	...	...	2,245
		3	12	4	1	...	...	...	...	...	..	...	17
		4					Not valued.						
Total	...	...	4,900	1,292	144	60	33	16	13	16	...	...	6,473
Papuáwa	...	1	1,009	431	56	21	14	7	14	14	2	...	1,558
		2	2,184	792	116	22	33	12	15	14	...	...	3,188
		3	358	82	18	...	3	...	1	2	...	...	464
Total	...	...	3,551	1,305	190	43	50	19	30	30	2	...	5,310
GRAND TOTAL	...	...	...	..	..	..	..	...	..	..	...	...	...

DIX A.

COMPARTMENTS.

Classes)—(continued).

LEORI.

3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...
5	2	4	...	1	...	1	...	...	...	13
...	...	...	...	...	...	...	...	...	...	...

APPEN

CONTENTS OF

(*Diameter*

Name of Block.	Number of Compartments.	BURANS.										Total.
		3"—6".	6"—12".	12"—18".		18"—24.		Above 24".				
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Rikta	1	20	13	10	5	1	3	1	1	.	...	54
	2	12	19	7	6	2	3	.	.	.	..	49
	3	41	38	8	...	..	1	...	2	...	.	90
Total ...	...	73	70	25	11	3	7	1	3	...	..	193
Bajamára	1	...	...	...	...	...	. .	...	...	...	...	...
	2	5	3	...	...	...	...	...	...	...	...	8
	3	..	...	...	...	...	...	...	...	...	...	...
Total ...	...	5	3	..	.	..	...	...	...	...	.	8
Legúna	1	16	78	31	8	5	6	1	...	...	...	145
	2	82	230	31	16	4	6	2	1	...	...	372
	3	107	343	5	41	11	13	1	6	...	...	527
	4	31	15	11	5	6	1	1	...	...	...	70
	5	...	1	.	. .	...	...	...	. .	. .	...	1
	6	...	...	...	.	..	...	...	..	.	...	...
	7	1	3	1	1	...	. .	...	...	...	...	6
Total ...	...	237	670	79	71	26	26	5	7	...	...	1,121
Konala	1	7	8	...	2	...	1	...	...	...	...	18
	2	...	1	...	...	...	...	...	...	.	..	1
	3	...	...	...	...	...	...	...	...	. .	. .	.
	4	...	...	...	..	...	...	..	...	...	...	...
	5	1	...	...	...	...	...	...	...	...	...	1
	6	2	4	6	1	1	...	...	..	. .	...	14
	7	13	50	13	3	3	...	..	4	..	...	86
	8	2	3	...	1	1	. .	...	...	...	...	7
Total ...	...	25	66	19	7	5	1	...	4	...	...	127
Karáli	1	6	18	...	1	...	1	...	...	...	...	26
	1a	17	57	9	10	...	5	...	...	...	...	98
	2	240	468	65	50	7	11	...	7	...		848
	3	357	641	202	145	39	69	7	39	...	...	1,499
	4	148	310	55	44	6	6	...	1	...	...	570
Total ...	...	768	1,504	331	250	52	92	7	47	...	...	3,041
Siasi	1	28	41	20	5	12	3	11	1	...	...	130
	2	1	9	3	1	3	...	2	...	...	...	19
	3	..	. .	...	...	.	...	.	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	29	50	32	6	15	3	13	1			149
Gutugád	1	...	...	...	.	...	...	...	..	.	..	...
	2	...	...	...	...	..	...	...	.	.	...	.
	3	1,349	1,130	446	44	127	102	120	64	1	3	3,410
	4	761	1,048	391	105	87	64	44	36	1	.	2,537
	5	430	365	49	6	12	...	2	3	3	1	877
	6	2	5	...	...	...		.		...	..	7
Total ...	...	2,542	2,578	886	155	226	166	166	103	5	4	6,831
Bhujkoti	1	...	...	...	...	..	...	...	...	...	...	..
	2	1,747	700	201	37	42	19	14	13	2	...	2,775
	3	...	...	...	...	.	.	..	..	...	..	...
Total ...	...	1,747	700	201	37	42	19	14	13	2	..	2,775
Karamba ...	...	..	..	..	..	..	...	...				
GRAND TOTAL ...	...	58,125	58,255	11,982	3,538	2,060	1,754	1,214	1,304	27	12	134,171

DIX A.

COMPARTMENTS.

Clausen)—(continued).

AYÁR.

3″—6″.	6″—12″.	12″—18″.		18″—24″.		Above 24″.				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
9	14	1	4	1	...	...	...	...	...	29
7	9	2	1	1	1	.	...	..	.	21
51	80	23	6	8	3	3	2	...	...	182
67	103	26	11	10	4	3	2	...	...	282
..	...	...	...	...	..	...	...	...	...	...
5	4	1	...	1	...	...	...	...	...	11
...	...	...	...	...	...	...	...	...	...	...
5	4	1	..	1	..	...	...	...	..	11
82	151	41	5	5	8	2	1	...	...	295
316	877	157	31	23	11	1	3	...	...	1,419
281	435	67	42	15	14	2	3	...	...	859
90	73	24	10	9	12	5	1	..	...	224
...	1	1	1	...	...	...	...	..	..	3
...	..	...	...	.	.	...	...	...	...	...
4	6	2	...	...	...	...	...	..	...	12
778	1,543	292	89	52	45	10	8			2,812
6	4	2	1	..	1	...	...	...	...	14
9	13	1	1	.	...	...	...	...	...	24
	4	..	..	...	...	..	...	...	...	4
	...	...	...	.	..	...	...	...	...	...
3	..	1	...	...	...	...	...	...	...	4
36	10	3	...	...	...	...	...	...	...	55
51	56	9	1	2	1	...	...	...	...	120
1	1	...	...	...	...	...	...	...	...	2
100	94	16	3	2	2	...	...	...	...	223
23	19	2	...	1	...	...	...	...	...	45
25	48	2	2	1	...	...	..	...	...	78
175	280	20	...	2	...	...	2	...	...	479
466	478	115	27	13	0	1	3	...	...	1,129
236	411	32	10	1	5	...	...	...	...	695
942	1,236	171	39	18	14	1	5	..	..	2,426
172	137	51	13	15	8	7	4	...	...	407
33	21	5	4	2	2	...	1	...	...	68
1	2	...	...	...	...	...	...	...	...	3
...	.	..	...	...	...	...	...	...	...	...
206	160	56	17	17	10	7	5	...		478
...	..	..	..	..	..	...	...	...	...	...
..	..	...	...	...	..	...	...	..	...	...
1,188	1,119	298	29	40	3	14	4	...	..	2,645
767	514	172	38	9	11	7	...	...	..	1,518
123	113	35	1	...	..	..	2	...	...	302
..	..	...	...	..	...	.	...	...	...	...
2,028	1,776	563	68	49	14	21	6	...	.	4,465
418	309	119	7	10	6	3	1	...	...	873
...	...	..	...	...	...	...	...	..	...	...
418	309	119	7	10	6	3	1		...	873
...	...	..	...	..	...			..	...	...
27,991	24,569	4,050	722	563	216	164	82	3	...	58,366

APPEN

CONTENTS OF

(*Diameter*

KU

Name of Block.	Number of compartments.	3"—6".	6"—12".	12"—18". Sound.	12"—18". Unsound.
Rikta ...	1	103	84	6	..
	2	158	63	7	1
	3	1,137	346	37	19
Total ...	...	1,398	443	50	20
Bajamára	1	9,521	2,012	88	51
	2	901	488	60	15
	3	3,511	1,124	96	44
Total ..	...	13,933	3,624	244	110
Legúna	1	73	299	35	14
	2	760	579	62	28
	3	210	156	13	6
	4	5,048	2,507	145	69
	5	2,959	1,229	73	36
	6	404	117	5	7
	7	360	286	19	8
Total ...	...	9,814	5,173	352	168
Konain	1	13	8	...	...
	2	45	32	4	2
	3	395	93	8	6
	4	257	185	17	...
	5	296	55	7	5
	6	187	68	21	4
	7	107	35	5	...
	8	5	5	..	...
Total ...	...	1,305	481	62	17
Karáli	1	40	89	12	3
	1a	257	278	12	13
	2	365	492	65	35
	3	417	338	67	39
	4	351	593	60	44
Total ...	...	1,430	1,790	216	134
Biári	1	34	21	3	1
	2	63	22	4	1
	3	2,024	1,040	214	116
	4	4,724	1,525	131	44
Total ...	...	7,445	2,608	352	162
Gutugód	1	1,052	278	70	9
	2	3,517	1,416	352	25
	3	2,357	1,311	521	35
	4	464	847	244	24
	5	1,859	776	128	20
	6	349	131	10	1
Total ...	...	10,498	4,259	1,325	114
Bhujkoti	1	1,018	290	89	19
	2	5,551	1,472	425	65
	3	6,999	1,562	484	69
Total ...	...	13,568	3,324	998	153
Karámba	1	684	267	59	13
GRAND TOTAL	...	171,388	77,033	12,503	3,032

DIX A.

COMPARTMENTS.

Classes)—(concluded).

KAT.

18"—24".		ABOVE 24".				Total.
		Green.		*Dry.*		
Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
...	...	1	3	...	...	147
1	2	...	1	...	...	233
14	1	9	5	...	...	1,508
15	3	10	9	..	...	1,948
18	14	4	3	...	...	11,711
7	11	2	9	1	...	1,474
35	15	18	19	...	...	4,862
60	40	24	31	1	...	18,047
16	...	.	1	...	...	439
8	5	3	8	...	...	1,453
3	2	1	1	...	...	392
38	47	27	56	5	1	7,938
15	17	14	16	...	...	4,359
2	3	...	...	.	...	538
5	5	...	1	...	...	684
82	79	45	83	5	1	15,802
...	...	...	...	...	...	21
...	...	...	...	...	...	83
6	2	2	3	.	...	515
3	2	.	1	...	...	405
5	2	2	2	...	...	374
8	...	7	4	..	...	299
..	...	..	...	...	...	147
..	...	...	...	..	...	10
22	6	11	10			1,014
1	1	...	...	...	...	155
...	1	...	...	...	...	561
12	13	9	4	...	...	995
13	8	4	2	...	...	888
7	4	1	1	...	...	1,061
33	27	14	7	..	...	3,660
1	...	...	...	...	...	60
4	1	2	2	...	...	99
48	50	14	38	...	...	4,148
37	13	32	26	3	...	6,535
85	73	48	66	3	...	10,842
24	8	8	2	16	...	2,307
83	9	50	11	47	2	5,518
103	14	71	17	9	..	4,438
19	6	11	8	...	..	1,123
51	1	30	14	6	2	2,887
5	2	7	5	.	15	525
285	40	183	57	78	19	16,858
12	8	4	12	4	...	2,056
94	35	51	37	3	...	7,733
120	35	59	45	14	4	8,791
226	78	114	94	21	4	18,580
24	12	23	13	..	.	995
2,574	1,131	1,441	939	160	38	271,439

APPEN

CONTENTS OF

(*Diameter*

Name of Block.	Number of compartments.	3"—6".	6"—12".	12"—18".	
				Sound.	Unsound.
Kua	...	...	...	...	...
Singori	1	...	...	...	...
	2	...	...	...	...
Total ...	...	...	...	...	...
Kota	...	...	...	...	...
Bândla	...	24	28	10	2
Kurwa	1	...	...	...	...
	2	...	...	...	...
Total ...	...	...	...	...	...
Raura	...	5	9	1	1

DIX A.

COMPARTMENTS.

Classes).

INAL.

18"—24".		Above 24".				Total.
		Green.		*Dry.*		
Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
...	...	...	.	...	..	.
...	...	..	..	..	.	.
...	..	.	..	...	..	...
...	..	...	...	...	...	.
...	...	...	...	...	...	...
2	...	.	.	.	...	66
...	...	...	...	.	...	.
...	...	..	..	..	...	..
...	.	.	...	...	...	.
...	..	..	2	.	...	18

APPEN

CONTENTS OF

(*Diameter*

Name of Block.	Number of compartments	3"—6".	6"—12"	12"—18"	
				Sound	Unsound
Kus		1,161	2,164	1,485	428
Singori	1	3,177	5,714	1,940	630
	2	2,173	4,160	1,423	426
Total ...		5,350	9,874	3,272	1,056
Kota	..	20,649	20,577	757	89
Bándla	...	8,673	7,979	1,777	152
Kurwa	1	6,757	4,476	187	62
	2	8,442	6,965	1,011	72
Total ...		15,199	11,441	1,198	134
Baura	...	1,547	1,773	802	288
Indri	1	456	1,801	827	204
	2	4,705	6,322	1,184	424
	3	918	3,316	1,249	357
	4	1,155	2,527	908	353
	5	1,149	2,459	580	289
Total		8,473	16,425	5,108	1,627
Badlur	1	19,212	14,422	3,758	164
	2	10,323	7,941	2,409	135
	3	3,699	4,017	1,101	138
	4	8,113	9,068	2,816	281
	5	21,393	11,324	2,791	256
	6	6,200	3,024	967	155
	7	8,400	2,956	723	105
Total ..	..	77,340	53,357	4,005	1,284
Mota	1	12,066	7,625	3,605	400
	2	6,024	4,002	1,695	187
	3	9,050	5,587	2,441	265
	4	2,162	1,302	1,124	49
	5	9,472	4,500	1,894	187
	6	8,471	2,112	958	85
	7	5,001	2 162	807	135
	8	10 647	3,183	1,392	91
	9	8,525	3,941	2,390	231
Total ...		71,408	34,716	16,312	1,579
Mesau	1	11,051	5,250	2,030	69
	2	18 027	9,876	4,388	134
	3	15 999	8,873	3,521	100
	4	10 020	1,481	1,004	153
	5	4,364	7,008	2,497	230
	6	6 181	5 823	2,080	314
	7	2,001	2,287	1,074	135
Total ...	..	69,143	43,598	17,237	1,190
Chátri .	1	5,985	4,500	1,502	165
	2	2,090	2,325	1,727	108
	3	5,200	4,002	1,054	200
Total		13,235	10,827	4,083	473
Kanásar ...		31,310	10,810	2,504	169

DIX A.

COMPARTMENTS.

Classes)— (continued).

GRAND TOTAL

18"—24"		Above 24"				Total
		Green		*Dry.*		
Sound.	Unsound	Sound •	Unsound	Erect.	Fallen.	
613	296	407	402	7	1	6,964
574	320	188	242	1	2	12,697
338	189	199	106	1	..	9,012
912	509	384	348	2	2	21,709
28	8	...	..	..	..	42,308
215	56	103	68	...	...	19,023
7	7	3	2	...	...	11,501
203	23	55	19	..	...	16,781
210	30	58	12	...	..	28,282
545	168	864	187	4	2	6,180
286	133	112	109	4	4	3,886
308	265	197	182	7	5	13,984
254	163	100	117	...	1	6,475
341	202	180	137	2	2	5,867
159	140	89	175	2	4	5,046
1,293	903	678	720	15	16	35,258
1,808	86	1,807	134	28	2	41,421
1,068	117	1,075	129	8	1	23,256
388	91	477	82	15		10,008
1,106	217	1,258	300	25	9	22,788
1,846	172	1,488	147	21	13	39,451
509	85	603	119	5		12,827
438	77	631	40	16	4	13,390
7,218	845	7,390	951	118	20	162,686
987	155	1,009	290	251	194	26,541
525	64	397	98	147	62	13,151
1,074	148	1,189	232	157	241	20,374
530	57	413	103	106	109	6,015
1,385	198	1,166	389	93	9	19,278
352	45	388	106	23	2	12,842
239	37	357	68	5	4	8,835
518	52	489	127	21	9	16,519
694	105	576	163	25	6	16,664
6,254	846	5,984	1,596	888	636	140,219
1,383	106	1,923	240	28	6	22,035
2,774	217	3,001	448	76	12	39,983
2,131	106	1,991	319	9	3	33,181
1,189	110	1,355	270	12	1	19,885
1,278	197	2,021	315	6	..	17,916
926	214	1,052	527	8	3	17,078
404	93	896	247	7	1	7,235
10,125	1,103	12,929	2,366	146	26	157,863
1,032	85	1,389	72	..	9	14,639
848	32	948	18	7	...	7,903
293	73	503	95	..	2	11,482
2,173	190	2,840	185	7	11	34,024
948	105	1,008	240	30	8	46,783

APPEN

CONTENTS OF

(*Diameter*

Name of Block.	Number of compartments.	BOX.										
		3″—6″.	6″—12″.	12″—18″.		18″—24″.		Above 24″.				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Kopti	1	...	...	...	...	...	...	...	...	...	...	..
	2	...	...	...	...	...	..	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	..	...
	4	...	...	...	...	...	...	...	...	...	...	...
Total ...		...	...	...	...	...	...	..	...	...	..	...
Asmári ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	..
Total ...		...	...	...	..	...	...	...	...	...	...	...
Maranwa ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	..	...	...	...	...	...	...
	5	...	...	...	...	..	...	...	...	...	...	...
Total ...		...	...	...	...	...	...	..	...	...	...	...
Thona ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	..
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
Total ...		...	...	...	...	..	...	..	...	...	...	...
Kutniar ...	1	...	...	...	...	..	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	..
Total ...		...	...	...	...	...	.	...	...	...	...	...
Kanjátra ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	.	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	..	..
	4	..	...	...	..	.	..	...	...	...	...	.
	5	...	.	...	...	...	...	...	...	...	..	.
Total ...		...	...	...	...	...	...	...	...	...	...	
Jádi ...	1	1,445	1,291	75	19	..	3	...	...	...	...	2,833
	2	2	6	2	..	...	...	...	...	...	...	10
	3	...	...	..	...	...	...	..	...	...	...	..
	4	.	...	...	...	...	.	...	..	...	..	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	..	...	...	...	.	...	...	...	.
	7	...	...	...	...	...	...	...	...	...	...	...
	8	...	...	...	...	...	...	...	...	...	..	...
	9	..	...	...	...	...	...	...	...	...	...	...
Total ...		1,447	1,297	77	19	...	3	...	...	...	...	2,843
Darna ..	1	36	29	...	1	...	...	..	...	...	..	66
	2	...	..	...	...	..	...	...	...	...	...	...
	3	237	257	45	16	1	...	...	...	...	...	556
	4	...	...	...	...	...	...	..	...	..	...	...
					Not	valued.						
Total ...		273	286	45	17	1	...	...	...	...	..	622
Matkángra ..	1	...	.	...	...	...	...	...	...	...	..	...
	2	153	99	8	...	...	...	...	...	...	...	260
	3	41	26	3	...	...	...	...	...	...	...	70
	4	...	...	..	...	...	...	...	...	...	...	.
	5	...	...	...	..	...	...	...	...	...	...	...
Total ...		194	125	11	...	...	...	...	...	...	...	330
GRAND TOTAL ...		1,914	1,709	133	30	1	3	...	...	...	...	3,795

DIX A.

COMPARTMENTS.

Classes)—(concluded).

GRAND TOTAL.

3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
5,984	3,857	1,018	227	1,219	167	1,559	276	31	10	14,948
6,328	2,585	739	87	404	74	1,119	218	21	10	11,645
6,296	2,874	1,195	107	794	64	1,338	174	14	8	12,864
4,804	2,194	617	66	332	60	296	101	4	1	8,565
23,502	11,510	4,169	487	2,809	365	4,312	769	70	29	48,022
7,575	4,952	1,605	127	617	95	239	81	1	.	15,292
4,575	3,943	1,408	231	904	214	607	325	9	..	12,366
7,364	6,613	2,817	527	1,634	307	1,428	411	21	1	21,139
19,514	15,508	5,890	885	3,155	616	2,364	817	31	1	48,781
14,805	3,198	1,225	181	452	78	495	190	12	7	20,643
3,268	1,966	1,702	189	865	94	099	201	23	12	9409
485	340	208	45	200	20	384	92	1	...	1,833
229	459	497	38	199	8	376	49	5	6	1,860
521	639	479	51	150	23	153	40	21	17	2,004
19,302	6,611	4,291	504	1,866	232	2,357	572	62	42	35,839
2,216	1,006	494	71	189	35	212	33	2	1	4,259
3,497	3,532	1,073	88	886	50	525	66	3	...	10,320
14,350	6,102	2,504	314	1,122	238	2,017	405	14	9	27,070
5,479	3,423	1,385	303	914	295	1,059	469	8	4	13,339
25,542	14,063	5,056	776	3,111	613	3,813	973	27	14	54,068
8,859	10,513	2,191	704	504	260	183	99	1	1	23,315
5,714	3,141	513	226	41	27	1	5	...	..	9,668
14,573	13,654	2,704	930	545	287	184	104	1	1	32,983
6,401	4,644	2,807	233	1,412	115	641	102	3	1	16,449
7,307	2,707	1,904	168	1,214	157	701	255	20	5	14,528
6,833	4,001	2,175	365	1,436	282	1,218	674	32	3	17 019
13,239	5,866	1,482	548	677	417	493	447	6	9	23,184
4,243	2,480	1,312	136	742	80	278	67	13	..	9,351
38,113	19,788	9,680	1,450	5,481	1,051	3,331	1,545	74	18	80,531
6,188	7,801	1,810	431	603	164	403	164	9	..	17,685
2,067	2,800	878	170	366	102	182	92	11	2	7,270
618	603	187	20	61	7	55	11	1	.	1,563
9,811	5,550	3,816	200	1,886	151	918	136	30	5	22,903
8,420	2,790	2,179	46	492	48	252	28	59	16	14,325
9,359	2,619	967	119	274	35	97	19	4	2	13,195
13,379	6,004	2,847	140	1,002	85	285	68	74	30	22,932
3,546	1,006	455	80	08	13	5	2	12		5,946
10,120	8,053	1,780	207	498	100	128	34	22	24	15,975
63,102	32,376	14,028	1,422	5,050	700	2,352	554	222	88	120,494
5,742	9,827	1,970	911	436	336	244	190	4	12	19,072
1,284	2,968	775	344	356	185	224	164	8	5	6,313
1,571	2,743	1,058	335	458	147	427	164	17	6	6,926
...	...	...	...	...	...	...	...	...	...	..
				Not	valued.					
8,597	15,538	3,803	1,590	1,250	668	895	518	29	23	32,911
566	1,000	470	46	199	41	153	64	1	...	2,000
3,932	5,471	1,577	272	416	119	284	118	1	1	12,186
9,662	8,364	1,925	413	084	103	513	265	1	.	22,010
829	1,320	628	45	348	88	201	181	.	.	3,656
1,370	1,485	571	134	213	79	211	139	.	...	4,202
16,359	17,706	5,171	910	1,960	520	1,422	702	3	1	44,654
..	...	...	...	...	...	..	..		...	...

APPEN

CONTENTS OF

(*Diameter*

INAI.

Name of Block.	Number of compartments.	3"—6".	6" 12".	12"—18".		18"—24".		Above 24".				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
Mohna	1	..	...	...	...	...	...	..	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
	5	...	...	..	...	...	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
	7	...	...	...	...	...	...	...	..	...	...	...
	8	...	...	...	...	..	...	...	...	...	...	...
	9	...	..	...	...	...	...	...	...	...	...	...
	10	..	...	...	...	...	...	...	...	...	...	..
	11	...	...	...	...	...	...	...	...	...	...	...
	12	...	...	...	...	...	...	...	...	...	...	...
	13	...	...	...	...	...	...	...	...	...	...	...
	14	...	...	...	...	...	...	...	...	...	...	...
Total	...	...	...	...	...	...	...	...	...	...	...	...
Durâni	1	...	..	...	...	...	...	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	...	...
	5	...	..	...	...	...	...	...	...	...	...	...
	6	...	...	...	..	...	...	...	...	...	...	...
Total	.	...	...	...	...	...	...	...	...	...	...	...
Ekra	1	...	.	...	...	...	...	...	...	...	...	...
	2	.	...	...	...	...	...	.	...	...	...	...
	3	...	.	...	...	...	...	...	...	...	...	...
	4	.		...	..	...	...	..	...	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
Total ...	..	...	..	...	...	...	...	...	...	...	...	...
Kuleed ...	1	...	...	...	...	...	...	...	...	..	...	...
	2	...	...	...	...	...	...	...	...	..	...	...
	3	...	...	...	...	...	...	...	...	...	...	...
	4	..	...	...	...	...	...	...	...	...	...	...
	5	...	...	...	...	...	...	...	...	...	...	...
	6	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	...	.	...	...	...	...
Amlokri ...	1	82	80	20	7	12	3	9	3	...	..	234
	2	8	101	117	34	49	23	35	15	..	1	383
	3	3	46	51	2	10	14	7	4	..	...	137
Total ...	.	93	236	197	43	71	40	51	22	..	1	754
Bánda ...	1	..	4	...	...	...	..	...	..	..	...	4
	2	193	228	123	11	41	9	29	6	1	...	641
Total ...	...	193	232	123	11	41	9	29	6	1	..	645
Hajáwa ...	1	...	...	...	..	...	..	...	...	...	...	..
	2	...	...	..	...	...	...	...	...	...	...	...
	3	...	..	..	...	...	...	...	...	..	...	...
	4	...	...	...	...	...	...	...	..	...	...	...
	5	.	...	...	..	..	...	...	...	..	...	...
	6	...	...	...	...	...	...	...	...	...	...	..
	7	..	...	...	...	...	...	...	...	...	...	...
Total ...	...	..	...	...		...	...	...	...	...	...	...
Dulians ...	1	...	...	...	...	...	...	...	...	...	...	...
	2	...	...	...	..	...	...	...	...	...	...	...
	3	.	...	..	...	...	...	..	...	..	...	...
	4	..	...	...	...	..	...	...	...	...	...	...
Total ...	...	...	...	...	...	..	...	...	...	...	...	..
GRAND TOTAL ...	...	315	505	331	57	114	49	80	30	1	1	1,483

DIX A.

COMPARTMENTS.

Classes)—(continued).

WALNUT.

3″—6″.	6″—12″.	12″—18″.		18″—24.		Above 24″.				Total.
						Green.		*Dry.*		
		Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
2	3	2		2	1					10
2	1			1						4
4	4	2		3	1					14
32	26	5			3		1	1		66
8	9	4	3							26
8	4	3								15
8	1	1								10
1	2									3
4	6	4	2	2						18
61	48	17	5	2	3	1	1			136
2	10	4		7	1	1				25
5	16	2		1						24
7	26	6		8	1	1				49
22	27	24	5	7		2	1			88
8	2	2								12
30	29	26	5	7		2	1			100
8	16	6					1			31
3	4	2			1	1				11
11	20	8			1	1	1			42

APPEN

CONTENTS OF

(*Diameter*

Name of Block	Number of compartments.	GRAND			
		3"—6".	6"—12".	12"—18".	
				Sound.	Unsound.
Mohua	1	1,570	1,232	646	215
	2	508	1,531	612	120
	3	5,291	4,259	1,714	524
	4	14,827	4,548	2,781	127
	5	7,239	4,176	1,354	179
	6	2,461	1,120	442	86
	7	2,828	1,064	556	112
	8	5,749	2,105	976	118
	9	3,444	1,606	806	74
	10	5,218	2,845	1,066	118
	11	916	478	200	35
	12	6,116	2,750	735	66
	13	3,853	1,630	820	84
	14	1,050	625	334	36
Total	...	61,071	30,000	13,051	1,894
Durâni	1	6,932	1,935	1,421	308
	2	7,123	1,778	972	248
	3	1,489	794	569	64
	4	2,028	1,154	542	57
	5	19,481	7,862	3,063	260
	6	7,925	2,561	1,003	114
Total	...	44,978	16,084	8,170	1,051
Ekra	1	2,265	4,200	1,609	452
	2	2,561	2,273	734	97
	3	820	843	503	65
	4	11,044	7,816	2,297	604
	5	10,080	6,649	1,048	325
	6	7,228	6,745	2,563	314
Total	...	34,018	28,526	9,054	1,917
Kulerod	1	5,737	5,986	2,221	552
	2	3,003	2,166	548	108
	3	5,444	5,327	1,068	220
	4	1,154	1,271	285	107
	5	4,448	4,491	1,719	227
	6	5,202	5,382	1,461	220
Total	...	24,989	24,623	7,302	1,438
Amlokri	1	8,830	7,566	3,048	522
	2	2,474	3,543	2,480	821
	3	1,502	1,760	1,004	167
Total	...	12,806	12,869	6,532	1,010
Dûnda	1	12,588	12,103	3,494	426
	2	4,170	4,432	2,960	539
Total	...	16,708	16,595	6,454	965
Hajáwa	1	8,941	3,916	1,307	248
	2	6,089	1,655	1 194	246
	3	8,464	4,470	2,574	205
	4	6,605	4,710	2,072	413
	5	3,295	4,718	1,946	202
	6	30,125	16,658	4,521	702
	7	35,313	14,886	5,420	1,077
Total	...	98,830	51,025	19,034	3,093
Dulsâna	1	11,014	5,500	2,012	341
	2	13,608	6,003	1,901	207
	3	227	178	127	19
	4	..	...	...	...
Total	...	24,849	12,647	4,100	627

DIX A.

COMPARTMENTS.

Classes)—(continued).

TOTAL.

18"—24".		ABOVE 24".				Total.
		Green.		*Dry.*		
Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
261	133	90	107	1	..	4,262
179	77	94	75	2	...	3,193
705	262	481	323	9	6	13,524
1,169	119	606	96	1	...	24,274
601	143	265	128	1	...	14,086
222	71	125	81	2	1	4,611
224	71	102	54	...	1	5,012
563	108	285	163	7	1	10,070
309	32	219	74	1	1	6,566
491	104	306	99	5	1	10,253
92	32	37	15	...	..	1,805
282	45	361	44	2		10,401
485	44	249	35	2	...	7,241
132	29	48	17		...	2,271
5,715	1,265	3,218	1,311	33	11	117,569
619	193	669	309	96	44	12,516
412	94	581	209	17	10	11,504
196	38	224	68	23	4	3,468
202	59	220	76	19	5	4,902
1,652	284	1,466	406	283	67	34,824
693	86	609	187	57	23	13,858
3,774	754	3,759	1,315	494	153	80,532
561	218	355	248	2	3	9,913
635	37	276	55	1	...	6,889
212	35	195	59	3	...	2,735
774	345	382	292	8	2	23,024
569	240	231	149	9	...	20,800
789	121	612	142	8	2	18,524
3,540	996	2,051	945	31	7	82,285
629	260	378	288	14	1	16,066
248	62	171	75	7	..	6,378
366	118	326	124	9	1	13,012
80	40	63	33	1	...	3,048
744	164	676	202	5	2	12,063
507	147	395	121	1		13,436
2,619	800	1,949	843	37	4	64,598
1,200	286	706	350	16	10	22,534
617	213	1,259	261	62	17	11,247
395	158	235	90	2	...	6,313
2,212	657	2,200	701	80	27	39,094
752	144	412	105	16	8	20,058
1,096	323	647	316	18		14,501
1,848	467	1,059	421	34	8	44,559
479	136	605	226	13	6	15,967
988	218	791	347	15	13	11,655
1,477	106	1,387	155	20	8	18,872
955	207	608	401	6	9	16,052
602	144	801	262	6	1	12,007
781	294	806	168	2	...	53,559
1,080	495	1,227	721	65	14	60,897
7,052	1,660	5,817	2,280	127	51	183,069
785	201	1,037	283	23	7	21,208
869	172	838	161	30	5	24,875
111	15	205	80	9	1	972
..	...	...	..	...	...	...
1,765	388	2,080	524	62	14	47,056

APPEN

CONTENTS OF

(*Diameter*

Name of Block	Number of compartments	3—6.	6"—12	12"—18"	
				Sound	Unsound
Pandáwa	1	1	2	2	
	2	7	4	10	1
	3	9	6	8	..
Total ..		17	12	20	1
Bikta . .	1		.		
	2		..		
	3				
Total					
Rajamára	1	12	4	2	
	2	15	10	2	
	3	25	7	3	
Total		52	21	7	
Legúna	1	1	5	14	1
	2	9	22	20	1
	3	3	8	6	2
	4	68	76	25	
	5	16	24	9	..
	6		1	1	
	7	1	4	2	.
Total ..	..	98	140	77	4
Konam	1				
	2				..
	3		..		...
	4	..		.	.
	5			.	.
	9	..			...
	7			.	
	8				
Total	.				
Kerári .	1		1		
	1a	7	11	8	3
	2	1	3		..
	3	4	4	3	2
	4	1	16	15	.
Total		13	35	26	5
Sáfri	1		.	.	
	2	1		1	.
	3	2	2	1	1
	4	3	5	..	
Total	..	6	7	2	1
Gutugál ..	1	1	1	.	
	2	8	2	5	
	3	..	1	1	
	4	1	2	21	1
	5	7	7	4	
	6	11	1	1	
Total	.	28	14	32	1
Bhujkota	1	4	5	...	..
	2	37	13	11	1
	3	64	59	40	7
Total .	...	105	77	51	8
Karámba	1	1	5	3	
GRAND TOTAL ...		433	438	277	30

DIX A.

COMPARTMENTS.

Classes)—(continued).

WALNUT.

15"—24".		Above 24".				Total.
		Green.		*Dry.*		
Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
1	...	...	1	...	...	7
6	1	1	...	...	...	30
2	1	2	...	...	...	28
9	2	3	1	...	...	65
...	...	...	...	...	...	...
...	...	...	...	...	...	...
...	...	...	...	...	...	...
..	...	...	...	...	...	...
...	...	1	1	...	...	20
1	...	3	3	...	...	34
4	...	2	2	1	...	44
5	...	6	6	1	...	98
7	2	2	...	...	...	32
10	2	7	3	...	...	74
2	...	2	..	...	...	23
6	1	2	2	...	...	180
3	2	2	2	...	...	58
...	...	...	...	...	...	2
1	...	...	...	..	...	8
29	7	15	7	...	...	377
...	...	...	...	...	...	...
..	..	...	...	...	...	...
...	...	...	...	...	...	...
.	...	...	...	...	...	...
...	..	...	...	...	...	...
..	.	...	...	...	...	...
...	...	...	...	...	...	...
...	...	..	...	...	...	...
...	...	...	...	...	...	...
...	...	...	...	2	...	3
1	...	1	...	...	...	31
5	1	4	1	...	...	15
1	1	2	4	...	...	21
5	3	5	...	...	...	45
12	5	12	5	2	...	115
...	...	...	...	...	...	...
1	...	...	...	...	...	3
1	2	1	4	...	...	14
1	...	1	2	...	...	12
3	2	2	6	...	...	29
...	...	..	...	..	...	2
7	...	1	...	1	1	25
6	1	2	2	1	...	14
8	...	9	2	...	...	44
2	...	5	1	...	...	20
..	...	...	...	...	...	13
23	1	17	5	2	1	124
...	...	...	...	...	...	9
18	3	9	...	2	...	94
29	6	10	7	1	...	223
47	9	19	7	3	...	326
...	...	...	2	...	...	11
149	32	80	42	8	1	1,409

APPEN

CONTENTS OF

(*Diameter*

Name of Block	Number of compartments	GRAND			
		3"—6"	6"—12"	12"—18"	
				Sound	Unsound
Pandawa	1	16,088	9,147	3,925	236
	2	20,095	9,110	3,085	184
	3	2,103	1,198	507	68
Total ...		38,286	19,455	7,517	488
Rikta ..	1	2,784	827	249	35
	2	1,667	880	311	70
	3	11,296	7,433	2,379	212
Total		15,037	9,129	2,939	317
Bajamára	1	32,603	15,327	3,610	572
	2	5,979	1,708	470	143
	3	17,264	8 732	2,926	304
Total ...	..	55,846	25,767	6,706	1,019
Legúna ..	1	208	803	210	44
	2	7,461	4,931	1,320	206
	3	5,433	2,752	681	187
	4	31,995	17,816	4,305	433
	5	19,508	9,504	2,872	242
	6	3,473	2,018	423	76
	7	2,123	1,540	439	176
Total ...		70,911	39,424	10,319	1,454
Konam ..	1	938	705	593	10
	2	4,522	1,616	630	10
	3	2,449	976	334	25
	4	6,167	3,319	927	58
	5	6,945	2,684	886	173
	6	1,023	510	244	70
	7	16,533	6,907	897	47
	8	1,509	669	151	5
Total	...	40,076	17,386	4,662	398
Karála	7	508	660	192	31
	1a	3,902	2,707	774	149
	2	12,661	6,579	1 459	200
	3	6,214	3,790	1,180	325
	4	1,135	2,952	1,469	184
Total		24,120	16,688	5,064	889
Slári	1	491	464	309	45
	2	1,532	823	291	58
	3	14,935	7,785	2,824	417
	4	18,609	9,730	2,283	157
Total ..		35,567	18,802	5,706	677
Arutupát	1	9,085	3,693	1,534	171
	2	16,873	7,719	2,195	109
	3	10,875	6,066	3,142	310
	4	2,770	2,511	1,383	232
	5	9,842	3,873	1,324	96
	6	4,256	1,809	626	69
Total		53,651	25,671	10,506	987
Bhujkoti ..	1	5,606	2,342	874	132
	2	10,181	5,790	2,717	417
	3	23,458	6,605	3,137	491
Total	...	48,245	14,737	6,728	1,040
Karámba	1	12,490	8,167	3,763	535

DIX A.

COMPARTMENTS.

Classes)—(concluded).

TOTAL.

18"—24".		Above 24".				Total.
		Green.		*Dry.*		
Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
976	127	1,145	279	15	7	31,945
1,272	174	983	276	13	4	35,196
131	41	231	75	4	1	4,359
2,379	3	2,359	630	32	12	71,500
167	40	206	62	2	..	4,372
173	62	152	95	...	...	3,289
898	139	1,542	337	7	15	24,258
1,238	241	1,900	494	9	15	31,919
1,652	328	1,329	371	16	10	55,818
353	147	597	312	13	4	9,726
1,200	195	999	353	38	6	31,717
3,205	670	2,925	1,036	67	20	97,261
94	43	99	43	...	2	1,020
668	152	602	238	20	8	15,786
460	91	654	121	5	2	10,386
2,106	348	2,397	827	75	35	60,397
1,287	142	1,133	317	60	15	35,206
90	37	33	40	5	1	6,196
236	125	283	162	1	4	5,089
4,841	938	5,401	1,753	172	67	134,680
280	8	381	9	...	...	2,024
486	6	712	28	3	...	8,008
206	25	325	42	10	...	4,392
485	47	750	96	11	7	11,807
456	116	988	280	11	3	12,542
123	32	212	65	.	..	2,279
632	44	663	90	15	1	25,829
91	6	101	19	3	...	2,554
2,709	284	4,132	624	53	11	70,335
118	17	179	24	3		1,732
358	68	366	93	2	1	8,119
811	109	636	96	15	6	23,572
434	134	421	126	45	7	12,676
775	90	557	35	5	1	7,198
2,491	413	2,159	374	70	15	52,383
214	40	447	112	2	1	2,125
220	49	301	83	6	2	3,365
1,488	278	1,816	539	25	3	30,109
797	79	1,496	141	32	5	33,329
2,719	446	4,060	875	65	11	68,928
562	70	274	72	186	74	15,671
975	109	950	180	242	93	29,745
1,635	338	1,900	404	123	53	25,026
342	137	300	130	4	...	7,799
788	84	1,153	249	132	130	17,671
353	50	594	160	35	54	8,008
4,655	788	5,261	1,275	722	404	103,920
392	84	245	88	58	28	9,849
1,280	330	1,399	615	84	40	31,872
1,942	374	2,041	490	232	105	38,875
3,624	797	3,685	1,193	374	173	80,596
1,294	347	642	676	61	21	27,996

APPEN

CONTENTS OF

(*Diameter*

Name of Block	Number of compartments	SÁL							
		6"—12"	12"—18"		18'—24"		ABOVE 24"		Total
			Sound	Unsound	Sound.	Unsound	Sound	Unsound	
Panjgéon	1	194	32	2	4		3	2	237
	2	1,045	111	11	11	5	4	5	1,192
	3	436	88	22	12	3	2	4	567
	4	1,010	199	58	18	13	9	5	1 312
	5	1,196	81	8	6	1	2	2	1,208
	6	19							19
Total		3,902	511	101	51	22	20	18	4,625
Barabégh ..	1	6,803	276	36	23	7	1	3	7,149
	2	719	83	14	2		2	4	
	3		...						824
	4				Not	valued			
Total		7,522	359	50	25	7	3	7	7,073
Haripúr ..	1	640	62	3	6	6	2	2	721
	2	1,827	241	26	22	6	2	2	2,122
	3	602	64	13	3	3		2	687
	4	1,814	100	23	4	7			1,948
	5	4,368	147	13	6	5		1	4 540
	6	2,979	127	12	8	10	1	2	3,139
	7	1,795	161	4	14	1	2	4	1,971
	8	298	11						309
	9	286	58	3	1		1		349
	10								
	11	20	2						22
	12	408	25		4		1		408
	13 & 14	9,930	353	52	23	24	11	21	10,414
	15	3,407	330	32	29	15	15	22	3 910
	16	3 526	484	72	58	40	20	20	4,220
	17	1,880	333	33	40	24	11	23	2,350
	18	23	4		1		2		30
Total		38,925	2,492	286	219	141	68	99	37,230
GRAND TOTAL		45 340	3,362	437	295	170	91	124	49,828
		BÁKLI							
Pánjgaon	1	305	148	12	58	7	10	13	555
	2	98	54	4	20	2	7	1	186
	3	76	50	8	18	5	3	1	161
	4	143	89	18	39	8	27	8	328
	5	158	53	4	26	3	8		252
	6	173	78	12	38	3	6	2	312
Total ..		953	472	58	199	28	57	25	1,794
Barábégh ..	1	1 881	289	28	72	16	17	9	2 312
	2	1,239	163	32	43	10	17	9	1,513
	3	1,232	100	13	20	11	8	1	1,385
	4				Not	valued			
Total		4,352	552	73	135	37	42	19	5,210

DIX A.

COMPARTMENTS.

classes).

SAIN.

6"—12".	12"—16".		16"—24".		ABOVE 24".		Total.
	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
22	2	1	2	...	1	2	30
14	10	...	4	1	2	...	31
6	3	1	1	...	...	..	11
23	14	2	9	...	4	3	55
9	3	...	...	...	...	...	12
2	...		...	...	...	..	2
76	32	4	16	1	7	5	141
616	75	3	7	...	10	...	711
481	68	5	26	...	16	5	601
...	...	...	...	...	...	...	...
			Not	valued.			
1,097	148	8	33	...	26	5	1,312
221	32	3	4	...	..	...	260
470	50	...	1	...	1	1	523
213	24	.	1	...	...	...	238
157	14	...	...	1	..	...	172
108	5	1	...	1	...	...	115
26	...	...	...	...	...	...	26
9	2	..	...	...	...	...	11
...	...	..	...	...	...	...	...
...	...	...	...	..	.	...	...
12	...	...	...	1	.	...	13
53	3	..	3	...	..	...	59
3	...	...	...	...	...	...	3
68	3	1	2	...	..	...	74
455	60	4	6	1	1	1	528
381	99	2	12	2	2	5	503
69	12	2	...	..	...	...	83
3	...	...	...	..	...	...	3
2,248	304	13	20	6	4	7	2,611
3,421	479	25	78	7	37	17	4,064

HALDU.

220	52	35	15	36	21	71	456
158	61	37	18	9	17	27	327
96	24	16	10	9	8	20	183
257	80	48	26	22	12	38	483
208	48	18	10	27	26	58	395
19	3	3	2	2	1	4	34
964	268	157	81	105	85	218	1,878
209	37	31	4	14	6	7	308
13	1	...	...	..	1	1	16
47	8	2	1	2	...	...	60
			Not	valued.			
359	46	33	5	16	7	8	474

APPEN

CONTENTS OF

(*Diameter*

Name of Block.	Number of compartments.	6"—12".	12"-18".		18"—24".		Above 24".		Total.
			Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
					SHISHAM.				
Páujgáon	1	1	1	..	...	.	.	.	2
	2	...	...	...	...	..	.	.	
	3	1	.	.	...	..	.	.	...
	4	.	...	...	...	...	.	...	1
	5	.	...	...	...	...	..	...	.
	6	..	...		...	..	...	...	...
							...	...	...
Total ...	...	2	1	...	..	...	...	...	3
Barábágh	1	...	...	...	...	...	...	...	...
	2	1	...	...	...	...	...	...	1
	3	.	.	...	...	...	...	...	
	4			...	..	...	...	...	...
					Not	valued.			
Total ...	...	1	...	...	...	..	...	...	1
Haripúr	1	...	...	...	...	...	...	...	...
	2	.	..	...	...	..	...	...	...
	3	...	..	...	...	..	...	...	...
	4	...	..	...	...	...	...	..	...
	5	..	.	...	...	...	...	.	...
	6	...	...	...	...	...	...		...
	7	...	...	.	..	...	...	...	...
	8	...	...	...	..	...	...	...	...
	9	..	...	...	...	...	...	...	...
	10	..	...	...	...	...	...	...	...
	11	...	...	...	...	...	...	...	...
	12	...	..	..	...	...	...	...	...
	13 & 14	2	...	...	...	...	...	...	..
	15	...	...	...	...	...	...	..	1
	16	1	1	...	...	...	...	...	...
	17	22	18	...	...	...	..	.	2
	18	...	...	...	...	...	...	...	47
					5	2			
Total ...	...	24	19	...	5	2	...	...	50
GRAND TOTAL ...	...	27	20	...	5	2	...	...	54
					GOSAM.				
Pánjgáon	1	462	161	50	32	31	18	18	775
	2	285	111	13	36	14	12	18	489
	3	123	13	8	7	5	5	9	170
	4	495	80	34	8	12	7	5	641
	5	542	96	20	12	14	4	7	704
	6	569	78	25	12	7	2	4	697
Total ...	...	2,476	539	165	107	83	48	58	3,476
Barábágh	1	450	58	23	11	4	..	1	547
	2	283	43	18	8	6	5	3	361
	3	354	37	15	2	3	2	...	413
	4				Not	valued.			
Total ...	...	1,087	138	56	16	13	7	4	1,321

DIX A.

COMPARTMENTS.

classes)—(continued.)

6"—12".	12"—18".		18"—24".		ABOVE 24".		Total.
	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
			KHAIR.				
136	8	2	1	.	...	...	147
36	1	6	...	.	1	1	45
146	6	1	1	..	.	.	154
67	3	6	1	4	..	...	81
44	5	..	1	2	...	...	52
1	.		...	..	...	..	1
430	23	15	4	6	1	1	480
8	1	...	...	..	...	...	9
31	3	..	1	.	...	...	35
9	...	1	...	...	..	...	10
			Not	valued.			
48	4	1	1	...	...	...	54
80	14	2	...	...	...	...	96
39	5	..	...	...	...	...	44
9	..	1	..	...	...	...	10
10		...	...	...	...	...	10
6	...	1	...	...	...	...	7
...	...	...		...	...	...	...
..		...	...	..	...	...	...
...	..	..	.	...	...	...	...
...	.		...	...	...	...	...
38	1	...	1	...	...	...	40
25	2	..	...	...	...	...	27
11	1	.	..	..	...	...	12
...	..	...	...	...	...	...	...
61	8	...	...	1	...	...	70
103	12	4	...	2	...	...	123
78	16	5	...	...	...	..	94
56	4	...	...	...	...	...	60
511	63	13	3	3	...	.	593
989	90	29	8	9	1	1	1,127
			JÁMAN.				
24	10	..	2	.	...	1	37
64	15	1	1	3	...	1	85
7	...	...	1	..	..	...	8
51	15	...	1	1	...	..	68
51	11	2	3	4	.	..	71
..	...	.	...	...	..	...	...
197	51	3	8	8		2	269
130	6	4	.	2	..	...	142
79	14	...	1	...	2	...	96
..	...	...	...	...	...	...	...
			Not	valued.			
209	20	4	1	3	2	...	238

APPEN

CONTENTS OF

(*Diameter*

Name of Block.	Number of compartments.	0"—12.	12"—18".		18"—24".		Above 24".		Total.
			Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
		BÁKLI.							
Haripúr	1	444	105	3	29	6	2	2	591
	2	879	187	39	23	8	7	6	1,149
	3	548	160	29	29	13	6	3	788
	4	861	182	33	29	18	7	5	1,135
	5	712	109	23	15	14	2	5	880
	6	245	108	8	25	5	1	2	394
	7	84	32	4	..	2	1		123
	8	321	80	10	16	8	2	2	448
	9	127	30	2	...	..	.	.	168
	10	294	28	13	3	11	2	6	357
	11	1,012	235	49	46	23	29	11	1,405
	12	1,701	276	28	65	15	19	10	2,114
	13& 14	1,170	335	24	105	26	24	9	1,693
	15	526	103	15	18	7	5	5	679
	16	488	146	6	61	18	33	14	761
	17	195	50	9	20	3	10	3	290
	18	84	5	...	4	..	2	1	46
Total ...	..	9,636	2,189	295	488	177	152	84	13,021
GRAND TOTAL ...	...	14,941	3,213	426	822	242	251	128	20,023
		SANDAN.							
Pánjgáon	1	252	3	2	.	.	...	..	257
	2	125	...	.	..	.	...	.	125
	3	45	1	..	...	...	...	...	46
	4	37	...	...	...	...	..	..	37
	5	43	3	...	...	...	...	..	46
	6	150	1	1	...	...	...	..	152
Total ...	...	652	8	3			...	.	663
Barábágh ...	1	820	1	2	...		...	...	823
	2	1,126	27	4	...	..	...	...	1,157
	3	330	4	2	.		...	...	336
	4				Not	valued.			
Total .	.	2,276	32	8	...	...	..		2,316
Haripúr	1	2	...	...	...	...	...	...	2
	2	13	..	...	..	...	...	...	13
	3	3	.	...	. .	.	...	...	3
	4	19	.	...	...	...	...	...	19
	5	23	...	...	...	...	...	...	23
	6	1	...	..	...	...	..	...	1
	7	...	...	..	..	...	...	...	...
	8	24	...	..	..	..	...	...	24
	9	6	...	...	...	...	...	.	6
	10	8	...	...	.	...	...	...	8
	11	416	5	1	...	...	...	...	422
	12	434	2	...	...	...	...	...	436
	13& 14	92	1	...	...	...	...	...	93
	15	57	...	...	.	.	...	...	57
	16	90	...	...	...	..	...	...	90
	17	1	...	...	..	...	...	...	1
	18	...	...	...		...	...	...	...
Total ...	...	1,189	8	1			.		1,198
GRAND TOTAL ...	...	4,117	48	12		..	...	...	4,177

DIX A.

COMPARTMENTS.

class)—(continued.)

6"—12"	12"—18".		18"—24".		Above 24".		Total.
	Sound.	Unsound	Sound	Unsound.	Sound	Unsound	
			HALDU.				
38	15	12	3	15	...	38	121
130	39	32	6	18	6	19	253
70	19	11	7	5	14	12	138
146	37	22	9	25	9	11	259
184	33	33	7	21	4	42	274
102	50	31	14	39	15	89	436
65	18	9	5	5	8	12	116
188	53	38	16	51	13	89	448
178	32	16	12	11	9	9	202
321	48	24	23	42	24	179	661
146	11	8	4	3	4	7	183
394	74	21	10	32	13	44	588
559	184	96	46	96	42	196	1,109
123	62	17	18	11	19	25	275
75	14	19	...	27		34	169
163	63	21	24	49	35	228	583
212	58	12	25	14	25	64	410
3,139	766	416	229	465	242	1,098	6,345
4,452	1,080	606	315	586	334	1,324	8,697
			BARA KUKAT.				
2,085	184	40	24	7	14	9	2,372
1,267	156	20	19	10	11	9	1,492
466	54	9	3	4	2	1	539
586	89	30	17	9	9	6	746
2,355	193	35	29	11	12	14	2,589
633	66	12	5	1			717
7,392	682	155	97	42	48	39	8,455
4,528	320	39	31	4	10	9	4,941
4,613	608	132	63	20	18	13	5,467
4,144	250	24	14	3			4,435
			Not	valued.			
13,285	1,178	195	108	27	28	22	14,843
722	113	17	15	12	4	10	893
1,508	226	45	28	14	12	9	1,842
808	140	28	17	8	12	3	1,106
1,694	253	36	34	9	5	5	2,036
1,750	171	33	23	25	23	33	2,067
1,707	242	33	25	25	12	27	2,071
1,078	134	13	11	6	4	7	1,253
1,523	105	14	55	6	51	17	1,891
1,745	137	8	9		10		1,909
4,741	246	15	27	5	22	5	5,061
3,143	228	25	9	3	4	1	3,413
7,073	362	27	23	4	13	8	7,510
6,407	307	66	77	29	49	51	6,988
2,178	187	12	30	5	14	5	2,432
2,699	317	51	36	16	19	9	3,147
2,282	431	54	69	25	44	51	2,956
1,345	257	27	54	10	54	25	1,772
42,497	3,921	509	542	203	319	298	48,287
63,174	5,781	859	747	272	425	327	71,585

APPEN

CONTENTS OF

(*Diameter*

Name of Block	Number of compartments.	6"—12'	12"—18"		18" 24'		ABOVE 24"		Total
			Sound	Unsound	Sound	Unsound	Sound	Unsound	
					GOSAM				
Haripur	1	222	26	28	4	20		21	321
	2	310	41	32	4	9	1	14	417
	3	229	18	15	1	2	5	2	272
	4	393	56	25	9	20	2	13	518
	5	370	43	36	7	25	3	25	509
	6	426	70	53	12	31	3	49	644
	7	90	25	7	10	7	7	11	163
	8	549	56	25	7	7	5	7	656
	9	81	15		2	5	2	1	106
	10	287	33	16	6	6	2	5	355
	11	894	107	50	8	18	4	4	1,080
	12	778	93	25	22	11	7	14	950
	13& 14	947	103	43	18	19	6	18	1,154
	15	142	21	9	6	4	3	6	193
	16	142	11	15	7	6	7	12	180
	17	117	24	4	5	7	3	11	171
	18	36	6	3	1	.		5	51
Total		6,005	748	386	131	192	60	218	7,740
GRAND TOTAL		9,508	1,425	607	254	288	115	280	12,537
					CHOTA KUKAT.				
Pánjgáon	1	891	25	9			...		925
	2	452	15	1			..		468
	3	244	8	6	..			..	258
	4	303	11	7					321
	5	874	7	4					885
	6	176	1						177
Total		2,940	67	27		..			3,034
Barábagh	1	1 380	17	5					1,402
	2	3,068	116	27	3			...	3,214
	3	441	4	1			.		446
	4				Not	valued	...		
Total		4,889	137	33	3		..		5,062
Harnpúr	1	267	10	4			...	...	281
	2	338	4	1	..				343
	3	225	3	2					230
	4	185	2	1			..		188
	5	589	11	..	..				600
	6	928	10	7	.			..	945
	7	504	2	3				..	509
	8	442	6				.	...	448
	9	533	11	1		...		.	545
	10	1,128	4	1	..			.	1,133
	11	1,177	5	3			.	...	1,181
	12	1,961	5	1	.	.			1,967
	13& 14	3,190	4	4		1			3,199
	15	715	4			...			719
	16	969	16	6		1		...	992
	17	3,625	74	18	2	1			3,620
	18	1,362	24	7	1		...		1,394
Total ..		18,094	195	59	3	3			18,354
GRAND TOTAL		25,923	399	119	6	3			26,450

DIX A.

COMPARTMENTS.

classes)—(continued).

6"—12".	12"—16"		16"—24"		Above 24"		Total.
	Sound.	Unsound	Sound	Unsound	Sound	Unsound	
			JÁMAN				
... 13	4	1	...	...	... 1	1	20
4	3	...	3		1		11
32	8	1	1		2		44
139	21	5	5	7	1	1	179
28	4		2			1	35
79	10	6	...	1		1	97
8	2						10
14	5	..			...		19
...	2	...					2
2						...	2
17	1	...	1	1	..	...	20
197	28	3	2	4	1	2	237
99	13	5	1	2		6	126
63	9	0	2	5	1	3	89
68	22	1	9	1	2	2	105
51	16		7		5		79
814	148	28	33	21	14	17	1,075
1,220	219	35	42	31	16	19	1,582
			GRAND TOTAL				
4,598	626	168	138	81	67	113	5,791
3,544	534	93	109	44	54	62	4,440
1,045	247	71	53	26	20	35	2,007
2,972	580	203	119	60	64	65	4,072
5,482	440	100	87	62	52	81	6,304
1,742	227	53	57	13	9	10	2,111
19,983	2,654	688	563	295	266	366	24,815
16,915	1,080	171	148	47	44	29	18,434
11,653	1,126	232	142	36	61	35	13,285
6,557	403	58	37	19	10	1	7,085
			Not	valued			
35,125	2,609	461	327	102	115	65	38,804
2,636	382	72	61	59	8	73	3,291
5,529	797	176	84	56	32	52	6,726
2,801	431	99	61	31	38	22	3,483
5,311	652	141	86	80	25	84	6,129
8,208	540	145	63	98	33	107	9,194
6,532	617	144	96	110	32	170	7,691
3,770	374	40	40	22	22	35	4,303
3,353	382	87	94	72	71	115	4,174
2,965	297	80	24	16	22	10	3,364
6,829	362	69	60	65	50	195	7,630
6,884	598	136	70	42	41	28	7,794
12,840	839	102	125	68	53	76	14,098
22,561	1,208	289	278	199	130	297	25,017
7,818	788	99	110	47	57	70	8,989
8,512	1,109	181	178	117	82	97	10,276
8,401	1,043	147	174	112	105	318	10,300
3,122	374	49	93	24	88	95	3,845
118,072	10,953	2,006	1,682	1,213	889	1,789	136,504
112	10	2	...			...	130

APPEN

CONTENTS OF

(*Diameter*

Name of Block	Number of compartments	3"—6"	6'—12"	12" 18'		18'—24"		Above 24'				Total
								Green		*Dry*		
				Sound	Unsound	Sound	Unsound	Sound	Unsound	Erect	Fallen	
KAIL												
Lurli	1	15	3	..		...						18
	2	25	2							..		27
Total ..		40	5									45
Sutoli		10	2		..						..	12
Forest Garden		4										4
Gobrám ...	1	3	2	..								5
	2	3	2							..		5
Total .		6	4					..		..		10
Patladhár ...	1	2	.				..					2
	2	..	..		..						.	
	3	4	1		..		..					5
	4	...					.			...		
	5	4								..		4
Total		10	1		..							11
Chilmeri	1											
	2											
	3	3		..	..					.	.	3
	4		.					..	..		..	...
Total		3			..	.						3
GRAND TOTAL		60	12								..	61
BURANS												
Lurli	1	1,002	1,231	227	93	71	53	25	25	.		2,727
	2	1,755	2,698	577	233	135	119	44	57			5,618
Total		2,757	3,929	804	326	206	172	69	82			8,345
Sutoli	..	435	610	367	101	200	92	158	90			2 059
Forest Garden		197	102	37	17	12	11	4	4			382
Golarási	1	586	895	367	101	159	99	86	125	1		2,419
	2	204	435	136	47	30	30	16	21			918
Total		790	1,330	503	148	189	129	101	146	1		3 337
Patladhar	1	536	679	372	92	104	68	50	64	2		1,967
	2	64	53	22	6	9	4	3				161
	3	900	662	231	111	109	100	62	98			2,276
	4	22	63	15	5	1	3	0	5			114
	5	100	141	80	46	18	20	11	14			430
Total		1 622	1,598	733	260	241	195	126	181	2		4 948
Chilmeri	1	4,043	3 115	598	198	111	71	31	21			8,188
	2	1,938	2 400	537	207	134	128	39	62			5,550
	3	1,332	2,723	709	364	129	191	38	131			5,767
	4	46	47	29	10	11	16	6	17			186
Total ...	..	7 443	8,285	1 983	809	385	403	114	231			19 691
GRAND TOTAL		14,045	15 752	4 360	1 704	1,227	931	568	730	3		38,380

DIX A.

COMPARTMENTS.

Classes).—(continued).

3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
						Green.		*Dry.*		
		Sound.	Unsound	Sound	Unsound	Sound.	Unsound	Erect	Fallen.	
					CHÍR.					
...	.	.	.	.	...	.	.		..	.
..	..	..	..	...		..	..	...	.	...
...					...			...	..	
11	3	...		.	...	.	..	...	.	14
4	1	...	..	..	.	.		...	...	5
			.		..	...	...		...	.
		..	...	.	...	...	..		...	..
		...	...	...	.	...	..		.	
	... 1	...	.		...	...	...	...	...	...
1			...	...	.		...	...	...	2
1	...	..	...	...	..	.	..	.	..	1
...	...	...	...			..	...	...	.	...
2	2	...	...	...		.	...	...	.	4
4	3	...		...		.		.	.	7
3	1	...	.		.	...	.	.	.	4
		...	...	...	...	...	..		..	...
...	..	...	...	...	...	...	...	...	...	.
.	.		...	...	...	.	...	...	..	...
3	1				...		...	...		4
18	7	...	..		..		.	.	...	25
					AYÁR					
924	1,089	227	30	48	9	1	2			2,339
1,023	1,744	473	91	60	26	7	2		..	4,826
2,847	2,833	700	130	108	35	8	4	..		6,665
1,900	1,852	607	120	134	44	41	19			4,717
517	841	141	13	22	2	1	1		..	1,038
1,411	1,264	329	105	52	27	24	21	..	.	3,233
1,392	703	155	50	28	16	3	2		.	2,349
2,803	1,967	484	155	80	43	27	23	...		5,592
732	644	152	23	29	11	14	8	...	.	1,613
110	146	34	8	1	2	3			.	304
1,918	1,152	336	90	86	51	36	16		..	3,080
46	68	19	5	1	4	...	2	...	...	145
974	1,060	173	71	19	14	6	6	.		2,323
3,775	3,070	714	197	136	82	59	32		...	8,005
3,693	2,426	338	46	44	12	10	4	.	...	6,573
2,163	1,725	228	34	22	13	6	2	.	.	4,193
1,116	1,544	243	79	30	16	7	5	...	...	3,040
90	74	31	8	10	12	2	3		...	230
7,062	5,769	840	167	106	53	25	14			14,036
18,387	15,491	3,345	709	504	257	160	92	..	...	39,065

APPEN

CONTENTS OF

(*Diameter*

Name of Block	Number of compartments.	3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				Total.
								Green.		*Dry.*		
				Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Erect.	Fallen.	
RAI												
Lurli ...	1	1	1	...	..	..	...	...	...	...	...	2
	2	....	...	...	...		...	...	...		...	...
Total ...	...	1	1	...	..	...	...	...	...	...	..	2
Sutoli ..	...	1	..	...	...	...	...	...	...	...	...	1
Forest Garden	..	..	...	...	...	...	...	...	...	..	...	...
Gobráni ...	1		...	...	...	...	...	...	...	...	...	...
	2	..	...	...	.	...	..	..	...	...	...	...
Total ...	...	...	..	...	...	...	...			...	...	...
Patiadhár ...	1	...	...	...	...	...	..	...	...	...	...	...
	2	...	...	...	...	...	...	...	...	...	...	...
	3	..	...	...	...	...	...	...	...	...	...	...
	4	...	...	...	...	...	...	...	...	...	..	..
	5	...	.	...	...	...	...	...	..	..	...	...
Total ..	...		...	...	...	...	...	...		...	.	...
Chilméri ...	1	.	...	...	...	...	...	...	..	...	...	...
	2	...	...	...	...	..	...	...	...	...	...	...
	3	...	...	...	..	...	...	.	.	...	..	...
	4	...	...	...	...	...	..	...	...	...	...	...
Total ...	..	...		..	.	..	...	.	.		...	...
GRAND TOTAL ..		2	1	...	...	...	...	...	...	...	...	3
KUKAT.												
Lurli ...	1	859	770	3	2	1	.	1	...	...	...	1,645
	2	231	185	7	13	2	...	1		.	..	439
Total ...	...	1,090	954	10	15	3	...	2	..	..	..	2,084
Sutoli ...		1,490	866	118	30	21	10	8	12	...	...	2,495
Forest Garden ..	...	105	28	2	..	...	...	...	..	..	..	135
Gobráni ...	1	954	558	75	33	22	14	9	3	...	...	1,669
	2	478	257	12	6	...	..	...	...	...	...	753
Total ...	.	1,432	810	87	39	22	14	9	3	...	...	2,416
Patiadhár ...	1	308	201	27	20	2	5	1	...	...	...	624
	2	103	60	10	3	2	...	...	..	..	...	178
	3	1,359	721	72	25	11	9	3	1	...	...	2,201
	4	240	132	1	1	...	...	...	..	...	...	374
	5	600	486	9	5	...	...	...	...	...	...	1,100
Total ...	...	2,670	1,600	119	54	15	14	4	1	...	...	4,477
Chilméri ...	1	1,521	752	27	15	...	2	...	1	...	...	2,318
	2	766	594	40	35	5	5	..	2	..	...	1,456
	3	941	641	43	41	4	9	...	2	...	...	1,681
	4	54	29	12	3	...	..	...	...	...	..	98
Total ...	..	3,282	2,016	131	94	9	16	..	5	..		5,553
GRAND TOTAL ...	...	9,904	6,256	465	202	70	54	28	21	...	...	17,025

DIX A.

COMPARTMENTS.

Classes).—(concluded).

3"—6"	6"—12"	12"—18".		18"—24".		Above 24".				Total
						Green.		*Dry*		
		Sound	Unsound	Sound	Unsound.	Sound.	Unsound	Erect.	Fallen	
				BAN AND MORU—(the latter shown between brackets)						
(79)	(90)	(21)	(28)		(7)		(4)			(235)
1,326	1,522	254	..	115	30	108	47			3,401
(4)	(11)		(6)							(21)
5,325	1,814	457	02	250	91	350	156	1	.	8,508
5,050	3,336	711	02	307	121	458	208	1		11,009
(83)	(107)	(21)	(34)		(7)		(4)		...	(256)
2,058	1,080	626	51	353	47	610	149	1	...	5,875
1,174	134	180	24	138	15	98	21	1	.	1,785
3,826	557	291	42	226	36	313	145	.	...	5,436
3,782	765	312	40	126	47	133	97	1	2	5,304
7,008	1,322	603	82	352	83	445	242	1	2	10,740
571	344	337	25	156	32	151	50	1	..	1,687
575	190	105	3	54	5	83	11			1,030
4,246	739	347	34	186	30	206	117	...	...	5,995
284	188	70	11	33	7	47	26		.	651
2,098	052	296	38	120	33	103	38	..	.	3,378
7,774	2,108	1,175	111	553	107	670	242	1		12,741
9,532	4,800	1,729	76	384	37	113	25	1	...	16,707
5,105	2,288	1,104	131	327	64	173	180		.	9,382
1,858	1,806	1,164	109	330	72	227	119	1		5,186
227	70	107	4	47	5	67	26	.	...	543
10,282	9,064	4,104	320	1,088	178	570	300	2		31,008
41,272	16,910	7,219	626	2,713	536	2,753	1,136	6	2	73,173
(83)	(107)	(21)	(34)		(7)	...	(4)			(256)

Name of Block.	Number of compartments	DEODAR.										Total.
		3"—6".	6"—12".	12"—18".		18"—24".		Above 24".				
								Green.		*Dry.*		
				Sound	Unsound	Sound.	Unsound.	Fit for timber	Unfit for timber	Erect	Fallen.	
Karémba ...	2	Not counted	2,461	478	7	310	11	68	902	Not counted	Not counted	4,237
	3		3,487	936	12	904	24	365	1,993			7,721
	4		1,509	295	2	257	2	106	791			2,932
	5		1,931	297	1	166	6	157	457			3,015
	6	20,000	307	54	.	34	1	20	61			477 / 20,000
Total		20,000 estimated	9,695	2,030	22	1,671	44	716	4,204		..	38,382
Pánikamál ...	1	Not counted	497	240	12	172	9	85	314	21	47	1,397
	2	7,000	3,005	1,149	79	749	71	127	1,054	27	98	6,359 / 7,000
Total		7,000 estimated	3,502	1,389	91	921	80	212	1,368	48	145	14,756

APPENDIX B.

Description of Blocks.

Name of block.	Area.	Configuration and aspect	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres							
Kua	66	Situated on the Mussoorie road, 10 miles from Chakráta There are no precipices, but the slopes of nalas are very steep. The chief spur from pillars 5 to 6 is flat-topped. General aspect northerly, modified to the north-east, east, and north west.	30° to 45°, average 35,° but over 45° alo g the sides of nalas	...	Blue and friable shales with a sub-stratum of hard slaty rocks. The sub-soil is a sandy clay along dhárs and a dark free loam elsewhere varying in depth from one to three feet.	A forest of bán, ayár, and buráns with a few kokát Ayár and buráns together are more numerous than bán, but from their small size are not conspicuous, and the predominating species seems to be bán This oak is, however, excessively lopped by the villagers, and most of the large trees are, in consequence, mere pollards A narrow strip of land along the main spur is a grassy blank. There is an undergrowth of grass. brambles, barberry, Sarcococca, Daphne, &c., and a thin layer of humus in moist places under dense stock.	Advance growth of the component species, represented by seedlings up to 10 or 12 feet high, exists all over the block and a few recent seedlings are also met with Young bán are, however, kept down by grazing and are often mere bushes.	It is stated that a small patch of cultivation exists between pillars 1 and 7 This should be enquired into, as it is understood there are no assessed fields inside the forest area. The lopping rules must be strictly enforced. Some trees may be sold for making charcoal.
Singhori ..	201	Situated on the Mussoorie road, just over 11 miles from Chakráta Precipices are usually absent, but the sides of nalas are steep, as also are some slopes facing west General aspect more or less north-westerly, with modifications to the north-west, north east. and south west	30° to 45°, the average being 35° in the upper, 40° in the lower parts and along nalas.	...	Blue shales and slaty rocks The soil is a loose, sandy clay containing a large proportion of loam and mixed with fragments of the underlying rock. It is pretty deep save where the underlying rocks crop out.	About 30 acres on slopes facing the south-west are grassy blanks containing a few individua ayár, buráns, and bán The remainder is stocked with the above species and an insignificant number of kokát, such as Cornus capitata and macrophylla, Myrica sapida, Euonymus, &c Ayár and buráns combined predominate, except along the lower course of nalas. Bán occurs everywhere and there are some fine young trees along nalas, but in the higher portions this oak is excessively lopped for fodder and a large number of the trees are reduced to mere pollards Ayár forms a mere scrub and never attains to 1st class dimensions, but there are a good many large buráns Saplings, poles, and young trees predominate. The forest is excessively open along dhárs and at south westerly aspects, but is half stocked or a little more along nalas and on northerly slopes There is an undergrowth of grass. with a few indigofera, desmodum, barberry, brambles, &c.	Advance growth of bán, ayár, and buráns is found all over the compartment, except on small grassy blanks facing south-west. There are seedlings up to 10 feet in height occurring at favourable aspects in dense patches. Bán seedlings are, however, much damaged by grazing and are reduced to bushes, except where the ground is too steep for cattle to graze There are also some recent seedlings here and there.	Trees may be sold for charcoal making, but they should only be felled over well established advance growth. The lopping rules must be strictly enforced.
Raura	106	Situated in khat Baraonwa, east of the Rifle Range, occupying both slopes of the Chopra Dhár, extending from the foot-path to Raura down to the junction of two nalas The chief aspects are north-westerly and north-easterly with	25° to 35°, average 30° along the main dhár and near pillar 3; elsewhere 30° to 45°, average 40°.	5,400′ to 6,000.′	Bluish and grey shales and hard slates prevail in the higher portions, but quartzose rocks crop out in the lower half, more especially along the main dhár The soil is a free clay from a half to 3 feet deep and it is mixed with a large proportion of loam along nalas or where the stock is	With the exception of two small blanks situated in the eastern half and dotted with a few saplings and poles of bán and ayár and a still smaller grassy blank between pillars 1 and 2. the whole is stocked with bán, ayár, buráns, kokát, and chír The latter occupies 15 acres in the lowest part of the block, except immediately along the nalas, and consists mostly of saplings, poles, and young trees, the number of 1st and 2nd class trees being very small More than a dozen of the large trees have been hacked	Advance growth of bán, ayar, and buráns exists throughout, both in patches and also scattered, but the young bán are much damaged by grazing. Recent seedlings are also met with here and there. The reproduction of chír is all that can be desired, the seedlings growing densely	To be worked for the supply of fuel to the Rifle Range according to para. 149. The lopping rules must be strictly enforced and the block closed to grazing, but grass cutting may be allowed. It should be considered

		modifications to the north-west and east.			dense Bands of a stiff clay crop out in places	for resin by the villagers, but the young trees are very good and are growing densely together The larger area, however, contains bán associated with ayár and burán on north-westerly and north-easterly slopes, and a few kokat, symplocos, lahrels, Cornus, Euonymus, &c. There are a good many mature bán and some also of ayár, burán, and kokát The chír portion is usually very densely stocked, but the oak portion is often very open and never more than half stocked. The quality of the chír is good, of the bán indifferent, this species being much lopped.	together and being of all sizes, from yearlings to those which have reached a height of 10 feet and over; they are vigorous and healthy.	whether, as this area is to be worked annually, it would not pay to make a fuel road from it to the Rifle Range, instead of having the wood carried there by coolies.
Kota	174	Situated on the right bank of the Amlawa, occupying the head waters of three small nálas just above the village of Kota. The edges of the minor spurs are very sharp and rugged. Predominant aspects east and north-east.	20° to 45°, average 35°,	To 5,700′	The underlying rock consists principally of shales which are very hard and mixed here and there with a very compact, hard and granular rock probably of volcanic origin. The soil is a rich, dark, free, sandy loam mixed with large pieces of the underlying rock, shallow on ridges, but deep in ravines.	A strip of land along the main ridge and slopes facing east are grassy blanks with next to no tree growth on them. The portions just below the blank strip are stocked chiefly with burán. which also predominates between pillars 15 and 1, where, owing to the proximity of Kota village. the few bán have been excessively lopped for fodder and reduced to a mere scrubby growth from 6 to 10 feet high. Between pillars 14 and 8 there is a pole forest of bán occupying slopes facing the north and north east and reaching more than half way up the slopes. The trees in this part are in a better state, with an average height of 25 feet, but are mostly lopped for fodder and reduced to pollards. The forest is about half stocked. The ground is covered with grass, myrsine, barberry, &c	Bán seedlings 2 to 5 feet high are found throughout the forest, except on blanks, but they have been kept down by constant browsing and reduced to mere bushes, especially near the village. Burán advance growth is more promising, the young plants being of all sizes, up to 8 feet and more numerous than those of bán.	The boundary is in an unsatisfactory condition and must be rectified when the line is cut from pillar to pillar, as provided for in para 174 of the plan. It should go in a straight line from pillars 10 to 15. Green trees should not be cut, unless it be found possible to close any portions to grazing, but this is not recommended for the present. The lopping rules must be strictly enforced and a report on the state of the forest made every March by the Ranger.
Bándla	98	Occupies the head-waters of two small nálas above the village of Hajta The chief aspects are north, north-west. and west.	25° to 45°, usually 35°,	.	Shales and slates, covered by a sandy loam in places over 3 feet deep, but on ridges there is a clayey soil. A very hard volcanic rock also crops out along ridges.	Nearly the whole stock consists of saplings and poles of bán, ayár, and burán, about half being bán. Mature trees are found only here and there and are, as a rule, unsound About one-third of the forest situated along the main ridge is a grassy blank and immediately below, as well as on slopes facing west, there is only a scrub never rising more than 8 feet from the ground. Lower down and in ravines the trees are much better, attaining an average height of 25 feet There are a few individual Inai. All fodder trees are excessively lopped.	There are seedlings from one foot high and upwards of all the species forming the stock, those of burán being the most numerous. Inside the forest the seedlings are very healthy, but along the edge of the blank and of the outer boundary they have been kept down by sheep and goats.	The lopping rules must be strictly enforced and a report made by the Ranger on the state of the forest every March. It may be found necessary after ten or twelve years to close about 20 acres as a continuation of the Kurwa coppice, but in the meanwhile no green trees should be cut.
Kurwa	130	Occupies the head-waters of two small nálas above the village of Kurwa. The principal aspects are north-erly, north-westerly, and south-westerly	25° to 40°	5,200′ to 6,700′.	The underlying rock is shale and the soil in compartment 2 is a rich, slightly sandy loam, in places becoming clayey, and it is covered with a thin layer of humus. In the	In the closed forest, with the exception of the blank along the ridge, there is a well-stocked forest of bán, burán, and ayár mostly in the younger stages, but they never attain a great height In the open forest there is a very poor scrub of the same species, never rising more than 20 feet, and being on an average	There are a fair number of seedlings of the various species everywhere. burán and ayár being the most numerous, but in the open forest the young bán are kept down by heavy	Compartment 1 to be coppiced and planted up; compartment 2 to be worked as a regular coppice, *vide* para. 151.

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect	Gradient.	Altitude.	Rock and soil	Stock.	Reproduction.	Treatment.
	Acres.				compartment 1 the soil is a loose sandy clay.	10 or 12 feet high only. All trees are excessively lopped, the bán for fodder, and it as well as burāns and ayár for manure. The ground in the open is covered with grass and undergrowth, such as brambles, barberry, myrsine, small ringals, &c.	grazing and can never shoot up.	
Indri ..	502	Occupies those portions of the basins of the Suri gád and Kanakar nála below the Bodiár forest, as well as some rocky precipitous slopes south of the Moila block, which drain into the Boi khad. Much of the higher portions are very precipitous and in places there are sheer walls of lime stone rock, which also frequently crop out in other places. The sides of nalas are usually very steep. General aspect south west with chief slopes facing north west and south-east.	Omitting precipices, usually from 35° to 45°; average over 40°, but sometimes 30° only, some moderate slopes facing north-west in compartments 2, 4, and 5.	To 8,566′	Lime-stone with an outcrop of quartzite along the main ridge, and sometimes interstratified with beds of a hard red shale which crops out along dhárs. A soft yellowish clay-slate rests on the lime-stone in the northern portions of compartment 2. The sub-soil is a sandy clay, and on it rests a dark loam, both kinds of soil being absent in precipitous places. A thin layer of rich humus is found along nálas and occasionally on slopes facing the north-west.	Essentially an oak forest containing a mixture of bán, moru, burāns, ayár, and kokát. Hai occurs occasionally near the Bodiár block and predominates in a small patch below Bojia lani. A little deodár is found in places on rocky ground near the Bodiár block and some lauri is scattered here and there, chiefly on inaccessible lime-stone precipices. There is usually a fair percentage of mature oaks, including some very fine, tall and straight trees with clean boles, but they are frequently unsound. The kokát occur along ravines, the species being bid-cherry, holly, wild pear, Cornus capitata, principal macrophylla, &c. The forest is fairly dense in ravines, but becomes rather open on southerly slopes and near the blanks. These latter are extensive, occupying nearly two-thirds of compartment 1 and the upper half of compartment 3, as well as smaller areas in compartments 2 and 5. Such blanks either contain only grass or have a few mature oaks scattered over the slopes. The ground is immediately covered with grass in the open and with such brush-wood as indigofera, brambles, barberry, sarcococca prinsepia under stock, whilst the small ringál (A. falcata) is found along some of the nalas.	Almost entirely wanting in the open blanks and very poor in the stocked portions of compartments 1, 3, and 4, there being usually only a few stray seedlings near nálas. In compartments 2 and 5, however, on northerly and north-westerly aspects, advance growth of the different species is found all over the stocked areas, there being seedlings of all sizes, from 1 to 10 feet high. Throughout the block there are usually a number of moru seedlings under seed-bearers, especially along nálas; they have been somewhat injured by grazing in compartment 5. Recent seedlings of all kinds are usually rare.	Compartment 1 to be kept as a grazing ground. Oaks for charcoal to be sold from the other compartments if any purchasers can be found.
Boliár	1,463	Consists of the basins of three streams, the Boliár, Remawa, and Thowa nálas, all of which unite lower down outside the Indri block to form the Suri gád. It is surrounded on the north, north west, and south-east by high ridges, and there are also promi-	Often over 45° along the main ridge and in places towards the south-west; elsewhere usually 30° to 45°, but in the hollow some times as low as 10°; along the lower course of nálas usually from 15° to 30°.	To 9,170′	Lime-stone overlaid in places by soft yellow clay-slates belonging to the Mundáli series, which forms the basis of the rather stiff yellow clay met with over large areas, and which is much developed in the low-lying portions and on gentle slopes along nálas, as also near Moila temple. The top soil under forest	With the exception of 12 acres of dense fir forest below Lokandi peak, 40 acres of oak in the south-west, and 80 acres of unproductive ground, the whole block is capable of producing deodár, but at present, owing to former ill-treatment, nearly two-thirds of the area consists of open, grassy blanks usually dotted, but often very sparsely, with naturally-sown or artificially-planted or sown young deodár and kail plants, together with a very few mature trees scattered here and there, chiefly in nalas. There is also an occasional moru with numerous	Under dense cover seedlings both of deodár and rai are scarce, but become more numerous, though unevenly distributed, in the more open forests, the advance growth being in places very good as in patches in compartment 5 on westerly and south-westerly aspects near the main ridge, whilst the dhar bounding	Thinnings amongst the dense patches of young deodár in compartments 1, 2, and 4 may be made, but great care should be taken to preserve the more healthy and vigorous stems and to maintain the leaf canopy sufficiently dense to enable them to be drawn

		nent ridges, along or near its south-western boundary with some conspicuous peaks: so that the central portion lies in a hollow, thus resembling the bed of an old lake. It is furrowed by a number of usually dry and shallow water-courses, and there is only one perennial spring, which is near the bungalow. Rocky, precipitous ground is common along the Moila dhár, and along the south-western boundary, but, as a rule, the slopes are even and not very steep			is a rich, black loam, shallow on southerly, but up to a foot in depth on the cooler slopes. It is often immediately covered by a layer of half-decomposed needles 3 to 6 inches deep. The lime-stone is pierced by veins of quartzite along the Moila ridge, and along the boundary of the Inari block it is interstratified in places with beds of metamorphosed and somewhat ferruginous shales	seedlings underneath it and on some of the lower southerly slopes a few bán. These blank areas include most of the slopes facing the south, south-west, and south-east, as well as land in the hollow formerly under cultivation and some small areas along the high ridges. Northerly, north-westerly, and the lower half of westerly slopes are usually well covered with a promising sapling and pole forest of deodár, rai, and moru with a proportion of mature trees; rai occasionally predominating on the cooler and higher moderate slopes, but usually outnumbered by deodár, especially towards the east. On the north-easterly slopes in compartment 6 there is the same mixture of species, but rai predominates everywhere and constitutes nearly one-half of the entire stock. There is a little cypress on the precipitous rocks along the main ridge, and in some of the shady ravines there are some kokát, such as, horse-chesnut, wild pear, holly, Cornus and Euonymus. On favorable aspects the forest is fairly dense and in some patches of deodár the canopy is complete, whilst in a few others thinnings are required. Nearly $\frac{1}{3}$ths of the stock are composed of saplings and poles. The mature deodár are very few in number and are found chiefly on rocky places or scattered amongst the young growth. Large rai and oaks are commoner, the former in nálas and in the higher parts, the latter mostly in moist ravines. The few 1st and 2nd class deodár are generally quite unfit for timber, being knotty, branched, close to the ground and sometimes hollow. Nearly all the good trees were felled by villagers before the advent of the Forest Department, and what remained were used to build the Chakráta barracks. There are some good rai in places, as below the Lokandi peak, near the Thuwa Gánwa, and in compartment 6, but the large majority are of an inferior quality and unfit for timber. The saplings and poles of all species, especially deodár, are usually of excellent quality. In open places there is a dense growth of grass and under stock under-shrubs, such as desmodium, indigofera, sarcococca, brambles, willows, and in places ringáls are met with.	compartments 1 and 2 together with its right slopes is thickly covered with deodár seedlings of every age and size, natural ones being mixed with others which were planted. Moru plants of all sizes up to 5 feet are often found in dense masses under the parent trees. Reproduction is *not* in some damp places. In the fir forest below Lokandi peak there is very good advance growth of firs, except in the nálas. The blanks adjoining forest are being filled up by seedlings, but elsewhere natural seedlings are usually only found near the few mature trees, although in the western portion there are a few kail seedlings sparsely scattered over the slopes and the lower open slopes of compartment 2 contain a fair number of deodar seedlings, as do the small blanks in the midst of the stocked portions of compartment 7. As a rule deodar seedlings, where they are found in the open, occupy ground where the grass is rather scanty.	up and acquire long clean boles. All blanks aggregating 360 acres should be planted up with deodár, kail, and in rocky places cypress within the period of the plan in accordance with the plantation scheme, and the old plantations treated in the mode laid down in that scheme.
Moila	...	1,200	Comprises all the slopes at the head-waters of the Kaurai nala and the Gharawáh gád included in forest limits. Along the main ridge as far east as Moila peak there is a tremendous line of	Omitting precipices, from 30° to 45° and over, being usually very steep in the higher parts, but with more even and moderate slopes in the lower parts. Rare in compartment 8 and in some	To 9,058′	The usual limestone rock much developed in the higher parts and along ridges. Clay-slates are found along the upper part of the Gazát-ki-dhár and soft crumbling blue shales crop out along the lower part of the same dhár as well	The upper slopes or about half the block are stocked with rai mixed with some morinda on the highest northerly slopes and with deodár, moru, and kail lower down. Lauri occupies the precipitous rocks, mixed in some places with a little deodar and rai. The upper part of compartment 5 adjoining Moila temple is an open grassy blank and other blanks of smaller extent run down some of the ravines.	In the fir forest west of the Moila peak there is a fair amount of advance growth of rai mixed in places with some deodár, moru, or lauri. The seedlings are from 3 to 15 feet high and are found more or less in patches, particularly on northerly,	Only trees for free grantees will be removed. Compartments 8 and 9 should be watched and, if necessary, cleanings made, amongst the young kail. The hacking of green trees for 'jogan'

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction	Treatment.
	Acres.	precipices often consisting of sheer walls of rock, similar walls traversing the middle of compartment 2 and forming the boundary between compartments 3 and 4. With the exception of the top of the Moila ridge near the temple, which is nearly flat or has very gentle slopes, the upper parts of the block are very rugged, steep, or precipitous, whilst lower down, below the line of precipices and below the Simla road, the ground is more even and the slopes more moderate, although still rugged and precipitous in places as in compartment 8. The chief aspects are northerly and north westerly.	other places. The open grassy blanks have often slopes of 20° only and the average in lower parts is about 35°.		as in compartments 8 and 9 along the outer boundary. The sub-soil is generally a sandy clay, wanting in places along dhárs, &c., but often deep in ravines. It belongs to the Mundáli series, at least along the main ridge, where it is much developed. Resting on it is often a dark, rich, free loam which is frequently wanting on dhárs and on open slopes. A thin layer of humus exists in places under the stock.	Over most of compartment 9 kail, chiefly saplings and poles, predominates, but elsewhere immediately below the fir forests there is a stock of oaks (moru and bán), either nearly pure or mixed, with some rai, deodár, ayár, burans, and kokat in the basin of the Kaurai nala, that in compartment 2 being often a mere scrub. Some distance below the Simla road, in compartments 7 and 8 (lower half), there is a mixture of ban and moru in places and a few rai in the higher parts and kail throughout. The blanks amount to over 300 acres and mostly occur along the outer boundary. About half of this area promises to restock itself naturally with seedlings of the various component species, especially with kail. Most of these blanks are dotted with a few mature trees of bán, moru, and kail, which, though much scattered, are the principal agents by which these areas are being again converted into forest; some of these large oaks have been excessively lopped. Kokat, which is found in moist places, consists of holly, wild pear, laurels, Euonymus, poplar, Cornus capitata and macrophylla, &c. The forest adjoining the blanks is usually very open, as is also the case on most slopes facing the east and north-east, whilst northerly and north-westerly slopes are the most densely stocked. At low elevations tall and healthy trees of the younger classes generally predominate, mature trees being confined to ravines and northerly and north-westerly slopes or in the case of ban mostly scattered over the blanks. Higher up there is a fair proportion of mature rai, and although a large number are unsound, many of them are tall and have clean boles, especially in compartments 4 and 5. Compartment 6 is deteriorating, and in the western extremity, where green trees are much hacked for 'jogan,' the 3rd class trees are dying out. The mature trees in compartment 7 are fit only for fuel. Large deodár and kail are much branched and knotty, the bases of the latter having also been much injured by fires. Some fine moru are occasionally met with in ravines. The undershrubs are desmodium, indigofera, barberry, &c., in	north-westerly, and westerly slopes, but there is usually next to no reproduction in the nalas. East of the Moila peak reproduction is poor in the higher parts, consisting of groups of rai seedlings 3—10 feet high scattered at great intervals, mixed occasionally with some ucrinda, and near the Simla road, where reproduction improves with deodár and kail, recent seedlings are rare. Patches of seedlings are usually found under mature moru. In the lower parts of compartments 1 and 4 there are seedlings of ban, moru, and kail of all ages, but usually in insufficient numbers. Immediately below the Simla road there are patches of rai, deodar, and kail seedlings of all ages, whilst lower down there is good advance growth of kail and bán, the latter being much damaged by grazing in the more accessible places. Over the greater part of compartment 9 there is a splendid crop of young kail.	in compartments 6 and 7 must be stopped.

						the lower open parts, and brambles, roses, honeysuckles, &c., higher up, as well as ringáls in some places.		
Missau	... 1,527	Comprises that part of the basin of the Mashak gád within forest limits below the Missau road, as far north as the Siári gád and the Kanásar block Precipitous ground is common in the upper part near the Simla road, in some places near the Mashak gád and on more or less southerly slopes. The ground above the Simla road is full of prominent limestone cliffs; moderate and even slopes prevail, however, on more or less northerly aspects and gentle slopes are prevalent down the Anni and Matuli dhárs The principal tributaries of the Mashak gád are the Marauwa gád and the Minau and Manjsan nálas. The chief aspects are north, north-west, and east, but most of the other aspects are represented on the numerous minor slopes.	25° to 45° rarely precipitous; average 35,° sometimes 20° only in parts of compartments 4 and 5.	To 9,200′	Limestone is the chief rock and is much developed in the higher parts, being especially prominent and forming the precipices above the Simla road. It is covered in places with yellow clay slates along the Missau road, and is sometimes mixed with beds of shale, reddish shale predominating in compartment 7. Beds of shale, slate, and quartzose are of frequent occurrence in the lower portions near the Mashak gád. The sub-soil is a sandy clay, stiffest in the open blanks, fairly deep in the lower portions, but shallow or absent on the higher rocky ground. It is mixed with fragments of the underlying rock and sometimes reaches a depth of three feet or over along the flattened tops of ridges in compartment 5, but on poorly stocked spurs it is very shallow In the oak forest there is a loose sandy loam with bands of clay in the very open forest on the lower slopes of compartment 7. The sandy clay is covered in ravines and on northerly aspects as well as in a few other places by a layer of dark, rich, loose loam. Humus generally occurs under stock, but in compartment 4 only on northerly slopes and in compartments 5 and 6, along the Missau road and along nálas.	Deodár predominates over more than half the block mixed almost everywhere with a small proportion of kail, in the higher parts with rai and in the lower with oak; kail mixed with some deodár and oak prevails over about 50 acres. There are nearly 300 acres of oak (mainly bán) forest comprising almost the whole of the stocked area of compartment 7 and the lower parts of 5 and 6. Rai predominates in the upper portion of compartment 6 and cypress on a few precipitous localities in compartments 2 and 3. The forest is very irregular and is usually densest in the middle or kail zone. It is open near Lokandi láni and also in the lower parts. It is very open in compartment 7 near the Mashak gád and on southerly, south-easterly, and easterly aspects, where open grassy blanks dotted in places with a few mature deodar, kail, bán, and sometimes, with lauri are frequent. Similar blanks occur on the westerly slope to the right of the Marauwa gád in compartment 3 as well as west of the gád just below the Simla road. Northerly and north-westerly slopes are, as a rule, well stocked In the higher parts along the Simla road the beds of nálas are void of trees owing to the action of the winter snow Altogether the blanks occupy about one-sixth of the total area of the block. In the deodár and kail zone a large part of the stock consists of saplings and poles, mature rai and deodár being most abundant in compartment 2 and elsewhere in ravines, on northerly slopes and scattered here and there along dhárs, whilst, large kail are commoner on slopes facing the north-east. Most of the kail is knotty and unsound. whilst old deodár, although tall, are also knotty and branched from near the base; but there are many tall trees with clean boles, especially in ravines and on northerly aspects in compartments 3, 4, and 6, and the same is the case with rai. Ban have been injured by lopping Saplings and poles which have not suffered so much from fires in the past are very promising The ground is immediately covered with grass and ferns in the open and with the usual brushwood in ravines.	Usually very good, both for deodar and kail The advance growth of these species from 3 to 15 feet high in patches in compartments 1 and 2, all over the slopes on either side of the Anni dhár and between the Matuli and Asmari kheras is splendid, often forming almost impenetrable thickets and the kail sending up annual shoots 3 feet long and over. In the upper part there are some very good patches of advance growth of rai, but seedlings are wanting in ravines. No regular fire line exists and reproduction has in consequence suffered much in the lower parts along the Mashak gád and near some of the cultivated patches. Thanks to the vigour of the seedlings and the density of advance growth, grazing has not done much harm, except near Lokandi láni, on the western slope of the Marauwa gád and on some of the more moderate slopes near the Missau road, where grazing is excessive. Seedlings are scarce in the oak forest where fires have generally been permitted.	Improvement fellings will be made in accordance with para. 136. Cleanings amongst the young kail in compartments 4 and 5 should be made in 1889 and repeated at intervals of five years, if possible. Free grants of 29 deodar, besides firs, &c., will be made annually from this block and Asmári to the khats named in Appendix I, and each khat can also purchase one additional tree Nine chaks of cultivation have been demarcated. No fresh land should be broken up No Gújars should be allowed to graze in the block. The outer boundary around Mashak has been rectified. The lower portions of the block have hitherto been open to fires, but were protected for the first time this year, and this protection must be continued.
Chátri	... 586	Comprises all slopes on the right bank of the Mashak gád within the forest boundary below the Kanásar block from the Siári gád to	Omitting precipices, 25° to 45,° average 35°.	...	The rock is limestone in the higher parts and in the lower friable shale with (in compartment 3) huge blocks of trap The soil is a loose clay in the chir,	Skirting the Kanásar block there is a splendid crop of deodár saplings and poles with the usual mixture of kail extending as far down as pillar 25 on the west and pillar 7 on the east, with blanks on the more precipitous portions. Immediately below there is a forest,	Advance growth of deodár and kail, where these species exist, is very good, there being a fairly dense crop of seedlings from 1 to 15 feet high of excellent,	New fire lines have been cut around the outer boundary, and the whole area is now under fire protection, the portion outside

APPENDIX B.

Description of Blocks—(continued).

Name of block.	Area	Configuration and aspect	Gradient	Altitude	Rock and soil.	Stock	Reproduction.	Treatment.
	Acres							
		the newly-made fire line below Kumalli khera, as well as compartment 3 below Khoki dhar. Bare, rocky precipitous ground occurs along the Tanguti and Khoki dhárs and the sides of nalas are often steep, but the majority of slopes are evenly moderate. Aspects northerly and north-westerly, but easterly in the lower part of compartment 3.			forest overlaid by a sandy loam under the oak and deodár forest, whilst there is a rich, dark loam with a layer of humus in places in compartment 3.	of bán very open in compartment 1 and mixed with some chir, the latter mixing in more and more freely at lower elevations until it becomes nearly pure throughout compartment 2, except in some ravines. Blanks are, however, very numerous and occupy extensive areas in the chir forest. Bán is much lopped for fodder especially near Koti village, and some chir has been hacked for 'jogan.' Numerous kokás occur along the Mashak g id	quality. In the oak forest in compartment 3 both seedlings are fairly numerous, but in the other two compartments reproduction is very unsatisfactory: only a very few individual seedlings of the different species are to be found	having been abandoned to the villagers. The fire trace in future should be burnt in the winter and should closely follow the cut lines. Chir may be felled hereafter, if protection proves successful. Improvement fellings can be made in the deodar portion of compartment 3 at the same time that they are made in Kanásar Five chaks, including all the assessed cultivation, have been formed.
Kanásar ..	173	Occupies the upper slopes on both sides of the continuation of the Tanguti dhár above Koti village. Some four or five low-lying peaks in the middle enclose a hollow in which are situated the Kanásar hut and temple. The left flank of the main dhár is very rugged and precipitous and precipitous ground also occurs near Khání pání, the hollow near the hut is more or less level. The aspects are very variable, westerly and north-westerly ones on the left flank of the main dhár, and northerly, north easterly, and north westerly on the right flank.	10° to 30° on the slopes surrounding the hollow, 35° to 45° and over on both flanks of the main dhár, but going down sometimes to 20° along the dhár on the east		The peaks and the prominent dhárs are formed of limestone, but in the lower slopes the rock is a hard bluish shale. The sub-soil is a sandy clay varying in depth from a few inches to more than two feet. The top soil is a rich, dark, and free loam shallowest at westerly aspects; it is covered under stock with a layer of humus	With the exception of a small blank near the Kanásar hut and one large open blank on the lower portion of the left flank of the chief dhár, extending from near pillar 26 to 29 the whole of the block is stocked with a splendid sapling and pole forest of deodár, kail, and bán, whilst some rai occur over a smaller portion above the Missan road from pillar 32 to 5 and also in the northern portion of the compartment above Koti pání. There is likewise a small sprinkling of more, ayár, burása, and kokát throughout the block, but deodár and kail are everywhere the most abundant. Mature trees, which are scattered over the area, bear a very small proportion to the whole stock. The forest is pretty dense on northerly, north westerly, and north-easterly slopes, but is often more open on westerly and easterly ones. The mature deodár are, as a rule, much branched and knotty, as are also the kail and rai, but the younger classes are much superior and very vigorous	A splendid advance growth of kail and deodár with abundant seedlings of bán exists all over the compartment and in places is so dense as to form impenetrable thickets. The seedlings are very vigorous with annual shoots averaging two feet in length. Recent seedlings of the above kinds are also met with everywhere, but rai seedlings, both recent and established ones, are less numerous	Improvement fellings to be made after those in Missan. All blanks have been successfully planted up. Timber for constructing the sledge road can be obtained from this forest, as for such a purpose knotty timber is not very objectionable. Some thinnings as at Bodiár may be made amongst the dense patches of young deodár, and cleanings amongst the young kail should be made first in 1901, *vide* para. 135. There is a right of way from Koti to Kopri and an annual festival is held in the forest, when the villagers are allowed to bring all their sheep and goats

Kopti	400	Comprises slopes from the Kopti tiba as far as the Kanásar block and the Missan road, being bounded on the west by the Manjaun nála and on the east by the dhár which separates the block from Thona. The closed areas, compartments 1 and 2, are furrowed by numerous small water-courses. The right banks of the Manjaun nála and its chief tributary are precipitous and rocky, but elsewhere the ground is more even, compartments 3 and 4 consisting on the whole of an extensive more or less uniform slope. Aspects north-easterly in compartments 3 and 4, northerly, north-easterly, and north-westerly elsewhere, with some smaller slopes facing the west and north-west.	Variable, usually over 45° on the northern parts of compartment 1 and along the Manjaun nála; on slopes facing west and south-west 35° to 45°; elsewhere 30° to 40°, going down to 20° in parts of the grassy blank in compartments 3 and 4.	...	Mainly limestone mixed with beds of blue shales along the Missan road and the lower course of nálas. In places in the higher portions clay-slates of a yellowish color are found resting on the limestone. The sub-soil is a sandy clay deep along minor and rounded spurs and on the grassy blanks, but wanting in precipitous places. It is covered with a dark, rich loam, very shallow in compartment 4 and almost wanting in the open grassy blanks, where the clay is much developed. A layer of humus occurs throughout under stock, except in compartment 4, on the northern part of compartment 1, and near Thona Máni.	Compartments 1, 2, and 3 are mainly stocked with firs. They are almost pure on northerly and north-westerly slopes, where the forest is dense, but elsewhere, where rai predominates and the forest is more open, it is mixed with deodár on westerly and south-westerly slopes and along dhárs Karshu caps the Kopti peak. Mora is found lower down along nalas and finally bán at the lower elevations. Kail also occurs on warm slopes and is most common in the vicinity of the Kanásar block. There are a few yew in the higher portions and a few cypress in the north on rocky ground. A fir forest mixed with a little deodár and kail also occupies the extreme east of compartment 4. Between the Kanásar block and China chak, mostly in compartment 4, there is a patchy forest of deodár, accompanied by rai, kail, and bán, saplings and poles greatly predominating and mature trees being generally confined to the sides of nalas. The forest adjoining the blank near Thona Máni is rather poorly stocked with karshu and the two firs, the former occurring more or less in patches with small open grassy blanks occupying the intervals. Blanks occupy nearly one-third of the block. The principal are an open blank near Thona Máni, the rocky slopes dotted with trees of deodár, kail, and bán on the right bank of the large feeder of the Manjaun nála, and a large area containing patches of cultivation and dotted with saplings, poles and a few mature trees of deodar, kail, and bán occupying the lower part of compartment 3 and the whole of the middle of compartment 4. The forest is dense in the higher part of compartment 1 and between the lowest fuel road and the open blank in compartment 3; but elsewhere it is rather open, becoming very open along dhárs and on the warmer slopes. In compartments 1, 2, and 3 a large proportion of the stock consists of mature rai, morinda, mora, and deodar, the firs being most numerous on northerly aspects and in ravines, the mora in damp places and the deodar near the Kanásar block; but below the lowest fuel road saplings and poles begin to predominate, these of deodár forming an important part of the stock. Some of the firs in the higher parts and along nálas are magnificent, but elsewhere they are only of average quality, many being unsound; and in compartment 4 mature trees of all kinds are much branched and often flat-crowned and hollow. The saplings and poles are superior in quality to the older classes. The ground is covered with grass, ferns, indigofera, &c., in the open, and under cover, in addition with brambles, skimmia, &c., together with a rank herbaceous growth during	Very poor in the higher parts, recent seedlings being almost entirely absent, whilst there are only a very few older ones of the two firs on northerly aspects and of karshu and rai on westerly slopes near Thona Máni. There is no reproduction whatever in nalas. A few young deodar are met with where the forest is open and along dhars. Lower down seedlings become more numerous, and in the lower half above the Missau road there is usually a very good advance growth of kail and deodár, the seedlings being from a few inches to 15 feet high and often forming thickets. In compartment 4 there is also a large number of young bán in the lower and of rai in the eastern extremity. In the large open grassy blank the seedlings are bushy, being much browsed by sheep and goats.	Fellings for fuel which are now in progress will be completed. They will be selection fellings in the higher parts of Kopti 1 and 2 and improvement fellings elsewhere. The boundary between the open and closed portions, being not well defined, should be marked off by a wire fence to prevent illicit grazing. Cleanings amongst young kail should be made in compartment 4 in 1892 and repeated at intervals of five years if possible. The blanks in compartments 1 and 2 should be planted up with rai and karshu in 1904. About two miles and a half of fuel paths will be required.

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect.	Gradients.	Altitude	Rock and soil.	Stock.	Reproduction.	Treatments.
	Acres					the rains. There are some ringáls in the higher parts.		
Asmári ..	380	Comprises the slopes below the main ridge between the Missau road, the Manjaun nála, and the Thona block. It is divided by a spur from this ridge, the most prominent point of this spur being the Dadora peak The main ridge is very precipitous and tortuous, the rocks being very prominent, as they are also in compartment 2. The higher eastern portion is cut up by numerous usually dry watercourses, feeders of the Manjaun nala All aspects are well represented, but more or less northerly ones predominate.	Along the main ridge and other dhars as well as along the Manjaun nála over 45°; elsewhere 30° to 45,° but the beds of nalas near the Deoban road and the blanks near Deoban tiba are pretty flat and the average is only 25° in the northern part of compartment 2.	...	Limestone predominates everywhere, but it is in places, mixed with beds of shales varying in color from a dark blue to a light yellow and of different degrees of hardness The sub soil is a sandy clay much developed along dhárs with rounded edges and on the flat peaks of the main ridges, whilst resting on it is a free, dark loam A thin layer of half-decomposed fir needles covers the northerly and north-westerly slopes.	A forest of rai mixed with a few morinda in the highest parts and with deodár together with a few kail and moru on westerly and south westerly slopes occupies about two-thirds of the block, the other third being mainly comprised by numerous open grassy blanks either without tree-growth or dotted with individual mature deodar, rai, kail, and in the higher parts with karshu Most south westerly and south easterly slopes as well as others facing west or east are occupied by these blanks The main spur from beyond pillar No. 87 to pillar No. 92 is occupied by saplings and poles of karshu, which in places, especially with westerly and north westerly aspects, come down to the Deoban road The forest is nowhere very dense and is generally very open on westerly and easterly slopes The part between Lokandi lani and the Missau gad is poorly stocked, being interspersed with large open grassy blanks. More than one sixth of the stock in compartment 3 consists of mature trees, scattered throughout the stocked area, but most numerous along nalas and on slopes facing the north In compartment 2 there is a fair proportion of mature trees in ravines and of much branched deodár in the open blanks with some fine trees in nálas, but the younger classes form the bulk of the stock in compartment 1, where the larger trees are stunted, branched, and unhealthy, the karshu being also unsound. Some of the rai and deodár in ravines are tall with clean boles, but elsewhere they are mostly much branched and unsound. The younger classes are of a somewhat better quality There is the same brushwood as in Kopti, with some ringáls above the Deoban road and near Dadora tiba	On the whole very poor, recent seedlings being generally wanting; but established seedlings of rai, deodár, and moru or karshu are found here and there in solitary patches In the higher parts among the Deoban road only the warmer slopes are dotted with a few seedlings, and here in the west they are stunted and damaged by grazing North of the Missau nala there is a splendid advance growth of kail and deodar with a sufficient number of rai seedlings of all ages, especially on the rounded dhars and slopes. A very similar advance growth is found on the portion of the open blank in compartment 3, which adjoins compartment 2.	Only dry wood should be taken out from the fir areas, including the whole of compartment 1. Improvement fellings should be made in the deodar-producing areas after those in Missau 6. A fuel path should be made from the Missau nála through compartments 2 and 3, passing below Dadora peak to Thona lani Ten acres in one, two, or more plots should be wire fenced in order to protect the young deodárs from being grazed down, and when they are tall enough to be out of harm's way the fence should be removed to another spot, and so on until the whole area is out of danger Compartment 3 should first be treated in this manner and then compartment 2 No Gújars should be admitted
Maranwa ..	640	Comprises the slopes below the Kopti, Thona, and Kanjatra blocks as far as the outer boundary between the Kanasar block on the	In compartments 3, 4, and 5 usually over 40°; elsewhere average 35,° but the sides of nalas are steeper, whilst in places as near China	...	Along dhárs, on precipices and in the higher portions generally limestone mixed in places with shales The lower slopes are formed of shales of various colors and	Nearly three-fourths of the block, including the whole of compartments 3 and 4, except three small and very open patches of ban and chir, is an open grassy blank dotted with individual bán, kail, and deodar in compartment 2 and with some rai and moru in addition along the	Very poor in compartments 3, 4, and 5, there being next to no seedlings in the first compartment, which is often also the case in many places in the other two,	Compartment 3 can be kept as a grazing-ground and burnt annually, but compartment 5 should be fire-protected, and the

		west and the old Simla road on the east. It occupies a portion of the basin of the Chasan gad Most of the ground on the right bank is rugged, precipitous, and rocky, but the slopes on the left bank are more moderate and below Chinakhera there is a gentle more or less continuous slope Aspect westerly in compartments 3 and 4, mostly north easterly in compartment 5, north westerly in compartment 1, and north easterly in compartment 2	Khera the gradient is as low as 20°		degrees of hardness The sub soil is a rather stiff clay in compartments 1 and 2 and a sandy clay elsewhere where it exists at all. It is overlaid by a shallow, dry loam mixed with fragments of the underlying rock and often absent along dhars There is no humus, with the exception of a thin layer on the left stocked slopes of China dhar	Marauwa gad, but without any tree growth along the Durani dhar The portion along the old Simla road is also an open grassy blank. Of the stocked areas there are over 100 acres of oak mixed with rai and kail in compartment 5 and in the upper part of compartment 2 and with chir in the lowest part of the latter compartment, there is also a sprinkling of moru, kokat, ajar and burans, but the stock is a very poor one Compartment 1 is the best, its upper portion as far as China dhar is covered with patches of nearly pure deodar saplings and poles, the number of mature trees being magnificent, interspersed with numerous grassy blanks Lower down kail and ban predominate and a few chir occur near pillar 103 The forest is generally an open one, the parts near the Barsu nala alone being densely stocked The number of mature deodar and kail is very small, but for other species the proportion is large except in compartment 1, where old bán only are frequent. Nearly one fourth of the stock in compartment 2 consists of mature trees. The stock is of inferior quality with the exception of the younger classes in compartment 1 There is the usual undergrowth of desmodium indigofera, brambles, barberry, &c., in most places	and when there are a few seedlings they are often stunted and browsed by sheep and goats	whole of compartment 1 should also be protected as well as compartment 2, as far down as the Aunakhera. Compartment 4 is already under protection
20	Thona	461	Comprises the upper basin of the Thonapani between the Bari dhár on the east and the Kopti and Marsawa blocks on the west. The main ridge is sharp-edged and possesses several prominent peaks. The block is traversed by numerous dhárs and small watercourses converging towards its lower end. Some of the dhars are sharp-edged, the sides of nálas steep, in many places precipitous and broken up by precipitous rocks below the Missau road. General aspect northerly, north westerly and north-easterly ones being also common, compartment 1 faces the south east	Along the main ridge, along nálas and on some slopes over 45°, elsewhere usually 30°; to 45° but 10° to 20° only in the beds of the two nálas in compartment 3 and along the northern boundary of compartment 1	Limestone mixed with shales of various colors and degrees of hardness forms the chief rock, soft shales resting on it in places along the main ridge. The sub soil is a sandy, loamy clay, mixed with fragments of the underlying rock. It is much developed along prominent but rounded dhars but is wanting on the steep or precipitous sides of nálas In places bands of stiff clay crop out to the surface The top soil is a dark loam fairly deep in the well stocked portions, but shallow in open blanks or altogether absent in places Humus exists on northerly slopes, but is absent from easterly and south-easterly ones	Mostly a fir forest in compartments 2 and 3, the firs being mixed with a few kail karshu moru, deodar, and yew Morinda is the most abundant above the Bodsár road, rai occurs everywhere, deodar and kail generally on slopes facing the north east and east just above the Kanasar road. The many peaks along the main ridge are capped with karshu and a few morinda saplings and poles, and thus oak with some rai forms the poor forest near Kopti tibs. The forest below the Missau road is more or less uniformly stocked with moru, bán, rai, deodar, and kokát. One fifth of the block is occupied by blanks, half of compartment 1 being an open grassy blank dotted with individual karshu and rai, and this blank continues along the slope adjoining the Kopti block, extending below the Missau road to the Thona pani and is dotted with a few trees of kail, rai, deodar, moru and ban, whilst a similar blank occurs near the Bari dhar just below the same road Three or four smaller blanks devoid of trees occur in compartment 3, and there are but few trees in the upper course of the nalas owing to the action of the winter snows The best stocked portions are the lower portions facing the north, the slopes facing east and north-east being often very open The density above the Bodsar road is pretty uniform There are a fair number of mature trees of the different	Backward throughout most of the fir forest, advance growth of the firs occurring in patches of from 10 to 30 plants, whilst there is no reproduction in ravines and recent seedlings are, as a rule, absent, a few established and recent seedlings of karshu are met with along the main ridge and there fire a good number of karshu and rai seedlings all over compartment 1 except in the grassy blanks to the right of Thona pani. Near the Missau road and on all slopes below it reproduction is very satisfactory, there being numerous young rai kail, deodar, and moru right down to the lower extremity of the blocks in the open blanks as well as under cover Recent seedlings are commonest on the flat dhars.	To be worked for fuel after Kanpatra 4 No roads will be required except over a mile in compartment 4 which has never been tapped, and fuel from the lower portion of which might probably be exported end the Marauwa fire line, which would have to be widened Thona 3 which is now open to grazing departmentally, must be closed when the fuel works begun Blanks should be planted up in 1905 Heavy fellings were made in this block in 1869-70

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect.	Gradients.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres					species, but the younger classes usually greatly predominate. Karshu is usually stunted, hollow, and much branched, as is also the rai in compartment 1. Elsewhere the mature trees are of fairly good quality and they are particularly tall, straight, and sound in the higher parts of compartment 4 and along nálas. The undergrowth is similar to that in Kopti and there are some ringáls in the higher parts.		
Kutniár ...	271	Comprises the southern slopes of the Deoban spur from the Odna tiba to the outer boundary near Asmoti láni. The ground is rugged, precipitous, with constant outcrops of rock, and it is cut up by numerous gullies. A high limestone precipice traverses compartment 2 and huge limestone blocks are scattered over the ground. General aspect more or less southerly	Excluding precipices 30° to 45° with some minor slopes of 20° to 30.° Often more or less flat along the main ridge.	...	The usual limestone greatly developed along dhárs and in the higher portions and interstratified with a few beds of crumbling shales in the lower portions. The sub-soil is generally a loose clay of variable depth and mixed with fragments of the underlying rocks. In the stocked portions there is a rich, dark loam 3 inches to 1 foot deep, with a layer of good humus above it.	About half the block is a rocky, rugged, grassy blank dotted only with individual oak near the stocked area. The remainder and upper portion, with the exception of two small patches of rai 15 acres in extent, is a forest of karshu oak which forms nearly two-thirds of the whole stock mixed with a variable percentage of rai and some other species in insignificant numbers. The oak greatly predominates on all slopes facing the west, south-west, and south-east, where the forest is often very open, and rai is most numerous on the small extent of cooler slopes. Saplings and poles form the greater part of the stock, but in compartment 2 there are a fair number of 3rd class stunted and crooked karshu and rai, which may be considered mature: indeed, a great part of the stock can rarely attain a diameter of over 18 inches. Some 1st and 2nd class karshu occupy the flattened tops of ridges along the main spur, but such trees are hollow, stunted, and unhealthy. The poor quality of the stock is due in a great measure to the exposed position of the block, but it has been aggravated in the case of karshu by excessive lopping. There is the usual undergrowth with ringáls near the main ridge.	A splendid advance growth of karshu occupies the stocked portion on slopes with westerly and south-westerly aspects and the open flat tops of spurs in the west, but the seedlings are generally found in patches where the stock is open and diminishes towards the east where they are occasionally absent. Recent seedlings are also pretty common. Rai seedlings are rare; they are bushy in open places and stunted at low altitudes.	Should be worked on Deoban. The old path from Deoban to Lokandi led through this block and might be re-opened when required. Fellings to be made after those in Thona, and trees only to be cut over well-established advance growth, the block being open to grazing. The villagers may be allowed to cultivate the unassessed patches in the blank area on payment of rent to the Forest Department.
Kanjátra ...	643	Comprises all slopes on the left bank of the Marauwa gád as well as the upper slopes on the right bank as far as the ridge bounding the Marauwa block. It is cut up into minor slopes by numerous secondary spurs and usually dry watercourses running down	Often over 45° along the main ridge, sides of many nálas and in some other places, although usually from 30° to 45,° but sometimes as low as 20° near the Kabatra and Jhulkari fields and near the peak on Bari dhár.	...	The ordinary Deoban limestone with in places soft clayey shales resting on it, especially on gentle slopes or caught up in the folds of the limestone and also along the lower course of the Marauwa gád. The sub-soil is clay, stiff on the peaks along the main ridge and in compartment 2, where it is much developed	Essentially a fir forest above the Paniawa nála, rai being almost pure over most of compartment 1, as well as predominating generally along dhárs and in the lower parts, whilst morinda is more numerous at high altitudes and in moist shady ravines extending far down on some northerly slopes. There is some karshu along the main ridge, and this species caps the peak to the west of Kanjatra láni and occupies the highest portion of compartment 5, close to Snow View, whence, on westerly and south-westerly aspects, it extends down to	There is a very good advance growth of karshu in compartment 5 along the Kanjatra dhár and on westerly and south-westerly slopes as well as on the peak to the west of the stables, and there are a few seedlings elsewhere along the main ridge. In the fir forest reproduction is usually very poor and is frequently altogether	Heavy cuttings were made in 1869, 1870, and 1871. To be worked for fuel according to the scheme in para. 142 and blanks to be planted up in 1892-94. Cleanings amongst the young kail in compartment 4 to be made in 1893, and after-

		from the main ridge which is sharp edged or branching off from a peak on the Bari dhár just below the Missau road It is traversed in its centre by the Panuawa nala Moderate fairly even slopes prevail especially along the Bari dhar, but the slopes along the main ridge and along many nalas, particularly along the Panuawa nala and the Maruawa gad, are precipitous Some dhars are also sharp-edged and broken up by precipitous rocks The chief aspects are northerly and north easterly, but north westerly ones are common and some slopes from the Bari dhar face east, whilst others, chiefly on the right banks of the Maruawa gad face west and south west.			along dhárs and in open grassy blanks, but sandy in most other places, being deep along flat dhars with gentle gradients, but absent on precipitous ground and sharp edged dhars The top soil is a dark, loose loam, fairly deep on stocked parts with a northerly aspect and in some moist ravines, but shallow along dhars and in open grassy blanks, where it is often absent, as it always is on precipitous ground. Humus occurs chiefly in well stocked forest facing more or less the north, and is absent from open grassy blanks.	the lower Kohuan road A little deodar and kail is mixed with the rai along the Bari dhar and in compartment 3 on more or less northerly slopes Below the Panuawa nala there is, at the lowest extremity of the block, a large area covered with kail saplings and poles together with a very appreciable proportion of moru and bán of all classes whilst along the above nála and the Maruawa gad there is a strip of oak forest, moru being the predominating species with kokat, deodar a few kail and individual rai as its companions Moru occurs elsewhere in the block in small numbers in sufficiently moist and sheltered localities and along many ravines, where kokat, such as horse-chestnut, bird-cherry, maples, willow viburnums holly, &c., are also found Nearly one third of the block consists of open grassy blanks, chiefly below the Missau road and near the cultivation of Kabatra, Bari dhar, and Jhalkuri In compartment 4 they are mostly dotted with kail saplings and poles with a few trees of deodar and moru in the lower and of rai in the upper parts, whilst the blanks in compartment 3 are dotted with mature rai, deodár, and moru usually much scattered and but rarely forming groups The stocked portion below the Missau road is a sapling and pole forest, there being but few mature trees and those chiefly oak, the proportion of mature trees elsewhere is also small, except in compartment 3, where there are a fair number of mature rai and moru The forest is moderately dense in the lower course of nálas and on more or less northerly slopes, but is open or very open on slopes facing east, west, or south-west along many dhars and in the beds of nalas at the higher altitudes Trees of all classes along the main ridge are stunted, knotty, and mostly unsound, but there are some tall well grown karshu near Snow View There are also lower down, some fine well-grown firs on northerly slopes and ravines, but trees on ridges and in open forest are very inferior, the younger classes are more healthy and vigorous The under growth consists of grass and ferns in the open, and of ferns, brambles, indigofera, desmodium, and daphne on ravines, and with a dense herbaceous growth of strobilanthes, &c, in the forest during the rains Dead ringal occur in every compartment.	absent, especially in the western parts and along the upper courses of ravines where snow accumulates. What advance growth exists is mainly confined to dhars but patches of morinda seedlings 2 to 10 feet high are not unfrequent in the eastern half Recent seedlings of both the firs are, as a rule absent In the western part of compartment 3 there are seedlings of deodar, rai and kail of all sizes up to 10 feet with some moru near parent trees extending to a distance of some chains round the open grassy slopes. Over most of the blanks in compartment 4 there is splendid advance growth of kail with a fair proportion of established seedlings of deodar moru, and bán, and also some rai near the Panuawa nala. Near the peak on Bari dhar the reproduction about the old deodár is excellent and the advance growth adjoining the stock is an almost impenetrable mass of kail seedlings up to 15 feet high. In the eastern part near Panuawa nala seedlings are not numerous enough, but recent ones are coming up.	wards at intervals of five years if possible The grazing board at the Maruawa gád in compartment 3 to be removed to its proper place on the Duram dhar About 2½ miles of fuel paths will be required. The lines under forest in compartment 1 which have been sown up with fir seeds must be re sown where necessary and kept weeded during the rains. A number of large trees have just been felled over these sowings to let in more light.
Jádi ..	973	It consists of the basins of four tributaries of the Sijla gád from Darna dhar on the south to the main Deoban spur as far as Odna tiba on the	Often precipitous, especially near main ridge and on southerly slopes, elsewhere usually 20° to 45° and over, average 40° to 25° only in places in compartments 5	To 9,331	The principal rock is the Deoban limestone mixed in places with beds of crumbling shale, especially in the lower parts, and capped, on some of the higher peaks as Odna tiba by	Nearly throughout compartment 9 and for about 15 chains below the Tons road along the upper portions of compartments 5, 6, 7 and 8, there is a forest of karshu almost pure on more or less southerly aspects, but elsewhere mixed with a small number of rai The stocked areas below the Jadi road contain a	Below the Jadi road rai seedlings are not uncommon on northerly slopes in the higher parts mixed with some moru, whilst lower down the advanced growth is mainly ban In the fir	Only dry wood should be removed from the fir areas, but to meet urgent departmental requirments some mature rai might be cut in compartment 4

APPENDIX B.

Description of Blocks—(continued).

Name of block.	Area	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres	north. The principal dhárs are rugged and sharp-edged, and so is the main ridge in most places. As the tributaries flow more or less west, the aspect is alternately north, north-westerly, or north-easterly and south or south-westerly, whilst in compartment 9 it is westerly. Slopes facing the south or south-west, i.e., those on the right banks of the tributaries, are rugged, often precipitous and broken up by limestone precipices, such being also the case along the main ridge, but there are some moderate slopes near Kanjátra láni. Northerly slopes are somewhat more even, especially in compartment 7, although frequently rugged and precipitous.	and 7. In compartment 9 the tops of peaks are rounded with gradients of only 10° to 20°.		yellow clay-slates which are ferruginous near Kanjátra láni. There is a clayey sub-soil, stiff in compartments 1 and 7 and on peaks in compartments 8 and 9, but sandy in compartments 2 and 3 and throughout most of compartments 8 and 9. It is very shallow and dry in compartment 3. There is a loamy top soil fairly deep on most northerly slopes and in ravines, but shallow and often absent elsewhere. Humus is chiefly found on northerly slopes and in ravines; it is entirely absent in compartment 3.	mixture of moru and bán with some rai, box, and kokat. Bán predominates on south and south west aspects and in the lower portions, whilst moru mixed with a large number of young rai occupies the slopes facing the north, north-east, and north west. Box is found along the course of the Sijla gád and along the other nálas. Between the Jádi road and the karshu forest, mostly on more or less northerly slopes and occupying over one-third of the block, there is a forest of rai with a certain number of moru and karshu and also of morinda in the higher parts. More than one-third of the block is taken up by blanks chiefly on the southerly and south-westerly slopes. They are almost always dotted with some trees, except on ridges in compartment 2 to 8, on the southerly slope near pillar 48 in compartment 4, and on the bare slopes in compartment 6. The trees on these blanks are chiefly mature oaks, and some rai, cypress, &c., in compartments 1, 2, and 3 and saplings and poles of various species elsewhere. A few deodár and cypress occur on some precipitous ground, and in shady ravines there are the usual kokát, spindle trees, dogwood, holly, horse-chestnut, willows, laurels, wild pear and a rather large tree (Daphniphyllum himalayense) called 'ratenda' by the Jáunsáris. In the higher parts there are samples and bird-cherry. The oak forest below the Jádi road is usually rather open, the lower portion of the slope from the Darna dhár being the most densely stocked. In the fir forest the stock is irregularly distributed, being fairly dense on most northerly slopes and near the karshu zone, but often very open in the lower parts and on southerly slopes. The karshu forest, except west of Kanjatra láni, is the most densely stocked portion of the block. Saplings and poles predominate almost everywhere in the stocked areas, but there is a considerable number of 1st and 2nd class fir in compartment 4, and in other places in the higher parts of the block. There are also a good number of mature trees, chiefly karshu, in compartments 7 and 9, mostly congregated on flat tops of peaks, whilst the younger classes greatly	forest in the least rocky parts there is advance growth in scattered groups of rai with a little deodar and kail from 3 to 10 feet high at the lower and a similar growth of rai and morinda at the higher elevations on northerly slopes, chiefly morinda, in the denser parts of compartment 7. Seedlings are absent in the upper course of ravines and there are but very few recent ones. Young moru are frequent near seed-bearers. The young rai are often stunted and unhealthy, becoming more or less bushlike in the lower parts at unfavorable aspects. The reproduction of karshu is much better and there is often splendid advance growth 3 to 10 feet high of that species, forming dense thickets on westerly and south westerly slopes, but it is rarer on northern aspects and absent in nálas. Recent karshu seedlings are also pretty common and there is a dense crop of young rirgils in most places under the karshu. In the open blanks seedlings are very rare, those that exist being generally browsed by sheep and goats. Numerous box seedlings of all ages occupy the two chief nalas in compartment 1. On the whole reproduction is unsatisfactory, save in the karshu zone.	Compartment 9, which is closed, and the karshu portion of compartments 5, 6, and 7 should be worked for fuel in the order laid down in para. 142. When Hajawa 8 has been coppiced a further area of about 12 acres should be selected for coppicing in Jádi 9, so as to complete the rotation, three acres being coppiced annually. The outer boundary has been altered around Mangár and Jádi for the benefit of the villagers. Oak lopping is very heavy and the lopping rules must be more strictly enforced, which will necessitate building a chauki at Jádi and stationing a forest guard there during the winter. A sample plot for measuring the growth of karshu is situated in compartment 7 and measurements should be made every year in the spring. Only a few short fuel roads will be required. All assessed cultivation has been included in the two chaks of Syáru and Donda. Extensive fellings took place in a portion of the spruce area in 1868-69 for the erection of the first temporary buildings at

						predominate on westerly and south-westerly aspects. Rai reaches its lowest limit below the Jádi road, where the trees are small, branchy and sickly; and elsewhere they are usually of indifferent quality, although there are some fine well grown ones in places notably in compartments 4 and 7. There are some fine karshu in the upper forests and the saplings and poles are also of good quality, but the oaks in the lower parts as well as in compartment 8 have been excessively lopped and are often mere pollards, except some fine trees in in accessible places		Chakráta, and as these fellings have produced hardly any young growth, although there is sufficient light, and as sheep and goats are admitted, this area requires complete rest
Darna	726	Comprises the slopes on the left bank of the Amtier gad from the Darnanau westwards to the outer boundary. Moderate slopes prevail near the main ridge but elsewhere the ground is steep and often precipitous. Compartment 3 is full of rugged and precipitous limestone rocks, whilst compartment 4, being for the most part unworkable, has neither been valued nor described. General aspect northerly with minor slopes facing north-west and north-east The aspects are south and south-west on the right bank of the Darnanau	Along the main ridge 25° to 35°, average 30°; elsewhere average 40°, but usually over 45° in compartments 3 and 4.	...	The rock is a dark, massive, impure limestone mixed in the lower portion with beds of shale. Clay-slates of a yellow color overly the limestone on the Gobrasi-dhar. The sub-soil is a loose clay, very abundant in the higher portions and in places more than three feet deep, being covered, save on ridges, by about a foot of rich, dark loam, which is, however, only superficial on grassy slopes facing south. A thin but rich layer of humus formed from oak leaves is found in the stocked portions.	An oak forest, the species being bán, moru, burána, ayár, box, and kokát, such as holly, horse-chestnut, maples, laurels, Cornus, sp meliosma, wild pear, &c. Moru predominates on the higher slopes with a more or less northerly aspect, whilst bán is almost universally present elsewhere, always greatly predominating on dry southerly aspects. Burana and ayar often form an important part of the stock. Box occurs for about ten chains up the Darnanau and along the lower bed of the nála which forms the western boundary of compartment 3. Kokat, however, predominates along most nalas, but few are found elsewhere The forest is pretty well stocked on northerly slopes, being densest in ravines; but elsewhere it is frequently very open, and more than one-third of compartments 1, 2, and 3 are open grassy blanks devoid of trees, except the slope on the right blank of the Darnanau which is dotted with mature bán. There are a considerable number of 1st and 2nd class oaks, especially on north-westerly, northeasterly, and easterly slopes and on precipitous ground, and they form nearly one-fifth of the stock in compartment 3. Saplings and poles usually predominate on northerly slopes, and most of the kokat as well as box belong to the younger classes, the larger box having been exported. The oaks have been overlopped in the upper parts, and frequently also burána. Mature trees on unfavorable aspects, especially south-westerly and westerly slopes, are crooked and much branched, a large proportion being unsound, but on slopes facing the north and in ravines in the lower parts numerous tall, straight, and sound trees are met with. Oak saplings and poles are mostly healthy and sound The ground is covered with grass on southerly slopes, and elsewhere with the usual brushwood of indigofera, desmodium, &c, with some clumps of the small ringál.	Reproduction has been much checked by heavy grazing, but is better on some of the more precipitous parts not so accessible to domestic animals Seedlings are frequently entirely absent in the higher parts, there being, however, a number of young burána and ayár on some dhárs; but the few bán seedlings are much browsed. On the left bank of the Darnanau, and in the lower parts there is a fair advance growth of moru, bán, ayár and burána, chiefly of bán in the lowest portions. Recent seedlings are rare. On the right bank of the Darnanau there are only a very few groups of 10 to 30 seedlings coming up here and there. Box seedlings are fairly numerous near the parent trees, coming up amongst the loose boulders.	This block should be worked for fuel after Leguna, but will not probably be required before the end of this plan. Fellings if made should be restricted to places where well-established advance growth is plentiful, as the whole area is grazed over. The lopping rules must be more strictly enforced. Compartment 4 should be kept as a grazing-ground. The block was heavily felled over for fuel for lime and charcoal-making up to 1870. Five chaks have been formed, that of Kawai being given to the Jádi villagers in the exchange for some of their fields at Kabatra in the Kanjátra block

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres.							
Matkángra ...	686	Comprises all the ground at the head-waters of the Amlawa gad included within forest limits. The block is cut up by numerous sharp-edged dhárs and deep nálas, the sides of which in their lower course are often formed of almost sheer walls of limestone very conspicuous along the Biti gad and its main feeder, the Seli nau. The highest part of the block along the Jindi dhár and near Jarma tiba is very broken and rugged with precipitous rocks, and there are also some precipices just above Goma-kai. Elsewhere the slopes are usually moderate and fairly even, although rocks crop out in places along the roads. The whole faces south, but the slopes have very variable aspects—south, south west, south east, east, and west. Most of compartment 5 faces the west, north-west, and north.	Omitting precipices 30° to 45° and over; average 35° below the Jádi road and 40° above.	...	Limestone rock very prominent in the higher portions and along nalas. In the lower parts it is occasionally mixed with beds of a reddish shale. Towards Seli láni beds of light crumbling yellow clay-slates overly it, but not continuously, and similar beds are enfolded by the limestone in places in compartments 4 and 5. The sub soil is a sandy yellowish clay, very deep in places and much developed along many of the dhars, but altogether wanting along the watershed line and on other precipitous places; it is profusely mixed with fragments of limestone. It is generally covered by a dark, free loam deep and rich in ravines and under forest, but very shallow and dry on open slopes. There is a thin layer of humus on northerly slopes.	An oak forest, the species being bán, moru, burans, ayár, and kokát. The bán predominates on the lower parts and on most southerly slopes below the Jádi road. Moru is often very numerous at the cooler aspects and is the principal species above the Jádi road, beyond the lime kilns. Kokát, such as horse chestnut, poplar, laurels, Euonymus, Cornus, &c., is mostly confined to moist, shady ravines. There are a few box saplings and poles along the Biti gád and the Matkangra nála. The forest is irregular and open, being seldom more than half stocked, whilst on more or less southerly slopes it is usually very open. It is dense on the northern flanks of the Kárbir and lime-kiln dhára and in many of the ravines. Blanks take up more than half the area, comprising the higher portion of the compartment between Seli láni and Moru téch and smaller areas of southerly slopes elsewhere. The higher and the western blanks are devoid of all tree-growth, but most of the others are dotted with mature oaks, chiefly bán and an occasional rai or lauri above the Jádi road. There is also some rai on the stocked parts of compartment 5. There are a large number of mature trees, especially on dry slopes, in compartments 1 and 4 and just below Kotyura tiba. Saplings and poles predominate in the stocked areas of compartment 2 and on the northerly flanks of the Kárbir and lime-kiln dhárs. Most of the older trees, especially at unfavorable aspects, are unsound, those on rocks and grassy slopes being also hollow, dwarfed, and flat-crowned. They are of better quality, however, on favorable aspects in compartments 2 and 3 and along many of the nalas, where there are some tall well-grown trees with clean boles. The saplings and poles are healthier and more vigorous. There is a dense growth of indigofera, desmodium, brambles, barberry, sarcococca, myrsine, ferns and herbs in most ravines and often under the stock and of grass on southern slopes. The large ringál occurs near Kotyura tiba and the small ringál is common below the Jádi road in many places.	There are no seedlings in the higher parts near the main ridge and but few in the open grassy blanks except under mature moru. Reproduction is also exceedingly scanty or altogether absent on many southerly slopes, as on that below the lime-kiln and also above Goma-kai. Moru seedlings of every age and size occur throughout the block, but they are not uniformly distributed, congregating mainly in groups under the parent trees. There is a splendid but patchy advance growth as well as recent seedlings of this species just below Kotyura tiba. Advance growth of bán, burans, and ayár occur here and there, but the young plants are by no means numerous and recent seedlings are still rarer. On the right flank of the Kárbir dhár there is, however, very good advance growth of bán, &c., except where the forest is too dense and recent seedlings are also numerous. Box seedlings are wanting.	This will form a separate working circle and fellings should be made or prescribed in para. The blanks in the closed areas should all be planted up from 1897—1903 in accordance with the plantation scheme. The alterations in the outer boundary are recorded in appendix. Only dry wood should be taken from the parts open to grazing, which includes the whole of compartment 4.

Mohna	1,071	Includes that portion of the basin of the Agar gad from the main ridge down to the outer forest boundary between pillars 12 and 31 It is drained by five streams, viz. Dorhana gad, Kua, Rangai, and Kathan khads and the Agar gad, so that there are five separate basins In the basin of the Dorhana gad the ground above the Mohna road is broken up by a succession of sharp-edged and rugged dhars and the part just below Chakrata view is very rocky and precipitous, whilst smaller precipices crop out here and there all over the compartment the small area below the road is steep, but there are only a few small precipices in the upper part The slopes on the right banks of the other four streams as well as those of compartment 4 are generally moderate and fairly even, there being only a few small precipices here and there, but the right bank of the Kathan khad is rather steep and rocky The slopes on their left banks, on the contrary, are mostly rugged and often precipitous The general aspect is south easterly modified by the various ridges and nálas, the aspects on the right banks of the chief streams being usually south or south east, those on the left bank north east	Excluding precipitous ground, usually between 30° and 45,° but as low as 15° to 25° near Snow View, near Deothat, and old fields in compartment 12, as also in places in compartments 6 and 8. On the right banks of the streams usually 40° or over, on the left banks 30° to 45° ; average 35°.	The Deothan limestone is the principal rock and it forms all the precipices. Along the main ridge it is associated in places as near Snow View with soft, blush clays belonging to the Mandali series which overly it or are caught up in its folds and along the Mohna road it is mixed with shales or clay slates, the latter being also found along some of the flat-topped dhars. The sub-soil is clay much developed on tops of peaks, on flat dhars and in the lower parts frequently sandy, but rather stiff along dhars and generally on the slopes to the north of the Rangai khad It is often wanting on precipitous ground. The top soil is loam, wanting on precipitous ground, on some blanks and in places along the Mohna road, usually shallow on steep slopes, but elsewhere fairly deep and rich in the stocked areas especially along nalas. Humus is plentiful in the karshu forest and on the stocked area on the right banks of the various streams, but it is very scanty below the Mohna road and on most of the slopes on the left banks of the streams.	There are 330 acres of oak forest, of which over half is a karshu forest occupying the highest parts of the block, compartments 4 and 5 and the upper portions of compartments 7, 9, and 11, and the remainder is a forest of moru and ban mixed with ayar, burans, kokat, and a few rai, and occupying all the lower stocked portions, viz, those of compartments 1, 2, 3 and small patches in compartments 6, 7, 9, and 11 Between these two zones of oak, with the exception of 23 acres of kokat scrub overtopped by a few rai, moru, karshu, and kail in the middle of compartment 12, the stocked area covering 186 acres, is a fir forest which occupies the whole of the forest portion of compartments 8, 10, 13, and 14 and some of compartments 4, 6, and 12 The karshu forest extends lowest down on southerly south easterly, and easterly slopes, where it is almost pure in the higher parts, but elsewhere it is mixed with firs, there being some nearly pure patches of morinda on small slopes facing north in compartment 5 whilst there are some moru and kokat along the lower course of the nálas. In the fir forest morinda often predominates in the highest parts, rai lower down, and associated with these are a good many karshu mostly saplings and poles in the upper half, and in the lower half moru with a few kokat, both these species being most abundant along the nálas To the north of the Bansara dhar there are also a few solitary kail scattered here and there and a few deodar along the Agar gad. About half of the block consists of grassy and rocky blanks occupying nearly the whole of compartment 2 and numerous blanks in the other compartments 10 and 11, these in the lower parts of compartments 6, 7, 8, 9 forming a belt which entirely separates the fir from the lower oak forests, of these blanks 193 acres of precipitous ground may be classed as unproductive, and the remainder consists of more moderate grassy slopes either devoid of tree growth as over a great deal of compartments 2 and 6 and the portion of compartments 3 on the left bank of the Rangai khad or dotted with a few solitary mature ban, moru, rai ayar or burans. The karshu forest is fairly dense, especially at southerly and south-easterly aspects, although it is very poorly stocked in compartment 11, and it is open on many northerly and north-westerly slopes and in some of the places where fellings have taken place The density of the fir forest is very variable, but on the whole it is rather more than half stocked, but open and often extremely so in compartment 12, where, on the contrary, the kokat scrub is very dense The lower oak forests are	In the lower oak forests in compartments 1 and 6 there is very good advance growth of moru, both scattered and in patches, and recent seedlings are also common, but reproduction of the other species is insufficient, established seedlings being only found along dhars and in open places here and there Elsewhere reproduction is poor, there being just a few oak seedlings in the small patches in compartment 2, and straggling seedlings up to 10 feet high of all species in compartments 3 and 11, but in insufficient numbers Recent seedlings are rare In the upper oak forests there is good advance growth of karshu in patches from one to eight feet high on most westerly, southerly south easterly and in places on easterly slopes, and there are some solitary established seedlings on northerly and north easterly slopes, but in the lower parts of such slopes there are mostly groups of young fir. Recent karshu seedlings are also pretty common, but they are usually very scarce on northerly slopes, as in compartment 4 Rai advance growth is rather poor, but there are some young moru near parent trees In the fir forests reproduction is on the whole rather poor In the upper portions there is some advance growth of karshu in patches and there are some established seedlings of the other component species growing more or less in groups or scattered all over the stocked area, the young morinda occupying the most northerly slopes and kail and rai the dhars and other open places, the moru	Fellings for fuel will be brought to a close in compartment 4 this year, and they have been going on continuously for the past 18 years The block should be re-marked as arranged for in para 142, and the whole of the remaining blanks in the closed portions planted up in accordance with the plantation scheme during 1894 to 1896 The best stocked portions have been closed to grazing since 1873 The outer boundary of compartment 14 has been altered so as to exclude the portion open to grazing and containing patches of cultivation

Description of Blocks—(continued).

Name of block.	Area	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres					usually open and often excessively so along dhárs, but fairly dense along nálas and also on northerly slopes in compartment 1. The proportion of mature trees is usually very small owing to the fellings which have been going on continuously in this block for the past 13 years, although there is af air number of 1st class trees, chiefly moru and bán, in compartment 3, but most of them here and elsewhere in the block are knotty and difficult to split, many being also unsound, although there are some fine tall trees in places. The karshu forest is composed chiefly of saplings, poles and young trees, and the stock is vigorous, except that some of the rai in the higher parts are stunted and somewhat diseased. In the fir forest most of the mature trees are rai and moru, whilst there are a few large deodár along the Agár gád. There is the usual growth of grass in the open, and in the lower oak forests some bushes of barberry, brambles, spirar. &c., along the nalas, with Cotoneaster macrophylla covering the rocks. In the karshu and fir forests there is often a dense and luxuriant growth of strobilanthes and other herbs in the rains and a thick under growth of brambles, skimmia, daphne, willows, desmodium, indigofera &c, with ringáls also in most places.	being chiefly found near the parent trees. There are a few deodár seedlings along the Agár gád. In the blanks reproduction is usually very backward, large areas containing no seedlings at all; but there are a few young rai, oaks, and kail near seed-bearers, becoming common in places in the northern half.	
Durání ..	881	Occupies the basins of the Morár and Kashmoi gáds and of a small stream to the north, from the old Simla road and the Bari dhár to the Kopti dhár, as well as some slopes of small area east of pillar 12 down to the Tons road. It is traversed by numerous usually dry and narrow watercourses with steep sides and, except in most of compartment	Along the main ridge, on slopes facing west, south-west, and south-east, and on sides of most nalás over 45° and frequently precipitous; elsewhere from 30° to 45°, average 40° and beds of nálas 35° only. The slopes in the extreme south of compartment 1 and between pillars 7 to 9 are between 20° and 30°.		Limestone is prominent throughout, forming most of the precipices and cropping out along nearly all the dhars. Above it along the Durani dhár there are large deposits of shales, and it is frequently mixed elsewhere with shales of various colors and degrees of hardness, which often predominate at low elevations and are ferruginous in the lower part of compartment 1. Along the Kashmoi gád a very hard, crystalline, bluish, quartz-like	About half the block consists either of unproductive, precipitous ground covering about 150 acres. or of grassy blanks without any tree-growth on them, or of blanks dotted in compartment 1 with individuals of bán, kail and moru in the lower, and with kail, moru and rai in the upper parts, and elsewhere with a few individual trees of deodár, kail, moru or bán These blanks occupy most of compartment 1 and nearly all southerly and south-westerly slopes. About 170 acres, including northerly slopes at the head of the Morar and Kashmoi gáds and two small patches in compartment 1, are stocked with firs mixed with a few deodár, moru, kail and kokát, and some stunted karshu along the main ridge. The oaks, moru and ban, form the stock along the lower course of	Outside the fire line only a few bán seedlings along streams; elsewhere in the open blanks there are no seedlings for a breadth of about 8 or 10 chains along the Simla road and reproduction is very scanty on the slopes facing south or south-west, although there are occasional patches of advance growth of deodár and kail; but the rest of the blanks in compartment 1 is well covered with seedlings of kail, bán, moru and deodár from 1 to 15 feet high in	In that corner of the block which joins the head of the Kanjatra block below Kauntlani, *i. e*, in compartments 2 and 6, heavy fellings of spruce were made from 1869 to 1871 for building timber. With the exception of some trees for free grantees only dry wood should be extracted. Cleanings amongst the young kail should be made in 1894, and afterwards, if possible. at

		1, by sharp-edged and rugged minor dhárs. There are extensive moderate and even slopes in compartment 1, but elsewhere the block presents a very rugged appearance, especially on slopes facing the south and south-west, which are almost always precipitous. General aspect north west, with minor slopes facing every direction			rock is exposed. The subsoil is clay, yellowish and somewhat stiff in compartment 6, but free and sandy elsewhere and mixed with numerous fragments of the underlying rocks. It is wanting on precipitous ground and along many dhárs, but is fairly deep in other places, especially on the more moderate slopes. The top soil is a free, sandy loam, shallow on westerly and south-westerly slopes or altogether absent, but often half a foot deep on northerly ones. Humus only exists in ravines and on stocked northerly slopes. It is from ½ foot to 1 foot deep in compartment 6.	the Morár gáds and some of its feeders and in the portions of compartments 3 and 4 under forest, moru being usually mixed with some deodár, kail and rai in the higher parts and bán with kail in the lower. In the lower part of compartment 2 over 31 acres kail saplings and poles predominate, mixed with moru and deodar in the upper and with bán in the lowest portions. Above the Konain road along the Khopti dhár there is a stock of much branched, knotty and deformed deodár, a few rai and kail with willows, viburnums, &c.; kokát, such as horse-chestnut, poplar, holly, willow, viburnum and Cornus are pretty common along nálas as well as moru. The fir forest is usually more than half stocked, but is open on westerly slopes and along dhárs. The oak forest is fairly dense along nálas and on northerly slopes but very open elsewhere, as are also, the deodar and much of the kail areas. There are a fair number of mature trees, the firs and moru occupying ravines and the lower slopes, whilst deodár, kail and ban are scattered over the areas affected by these species; fir saplings and poles form the stock in the highest portions, the number of mature trees in compartment 6 being very small. Large trees are usually unsound and of indifferent quality, most of the deodár being flat-topped, much branched and unfit for timber, whilst the firs along the main ridge in compartment 5 are stunted and unhealthy and even saplings and poles are dying out. Some fine rai, however, with clean boles occur along the Konain road, in ravines and on some northerly slopes, and the majority of saplings and poles are healthy and of good quality. The open slopes are covered with grass and on the cooler slopes also with ferns and some indigofera. Under cover there is the usual brushwood, desmodium, indigofera, brambles honey-suckles, willows, &c., being abundant above the Konain road, where during the rains there is a dense herbaceous growth of strobilanthes and so forth.	the lower and of rai in addition in the higher parts. Reproduction of rai is very backward, but there is some good advance growth of morinda along the main ridge together with some young kail and a few rai; but on the whole reproduction in the fir forest is not satisfactory, recent seedlings being almost wholly absent. Young moru often occur in patches under parent trees in many places and those of bán here and there, but seedlings in the oak forests do not exist in sufficient numbers, especially in compartment 4, and many have been damaged by grazing.	intervals of five years. Three chaks have been found in Duráni 1, some unassessed fields having been included in the large chak in exchange for others in Kanjátra.
Ekra	...	1,026	Contains a portion of the upper basin of the Agár gád between the Bodi gád and the Bawána dhár, the basins of the Phaphrota and Patrani gáds, the right bank of the Suka gád and the slopes facing Baniána from Moti dhár to the Binár gád. Except compartments 4 and 6 (lower part), nearly the whole block	Average 45° in compartments 1 and 2, over 45° in compartment 3, 30° to 35° in compartments 5 and 6.	...	Bare limestone walls are prominent throughout the block, and there is but little else along the upper boundary and in compartment 3. There are some shales in compartment 1 and beds of slate out crop here and there in compartments 5 and 6. Soil is often absent in the localities just mentioned. Elsewhere there is a stiff clay often of a good depth	Half the block consists of open, rocky, grassy blanks usually devoid of all tree growth and unsuitable for planting purposes. There are also 80 acres of open grassy blanks which could be planted up. The slopes on the left bank of the Bodi gád are pretty fully stocked with firs and karahu, and small areas between pillars 6 and 8 in compartment 5 are half stocked with the same species. The remainder is an oak forest containing moru, bán, burána, ayár and kokát, such as wild pear, meliosma, Cornus, &c. Moru is found in the higher parts and on all cool slopes, kokát along watercourses, and the other species mixed together	*Nil* in the open blanks. Under forest seedlings of all the component species are to be found, young bán being rare, but moru common under seed-bearers; advanced growth of burána and ayár is usually fairly good. On the whole, however, reproduction is unsatisfactory and has suffered from fires except in moist places and the oaks have been kept down by	Compartment 3 to be retained as a grazing-ground. The stocked portions of the other compartments to be fire-protected and the grassy slopes burnt. Lopping rules to be enforced, special attention being paid to Ekra 2. Seven chaks have been demarcated and they include all assessed

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres.	is rugged, rocky and precipitous and cut into deep gullies with sharp-edged spurs It is bounded on the north by huge limestone precipices Compartment 6 faces more or less east, but the rest faces the south-west and south-east with some minor slopes facing more or less north.			covered in places with a light loam under stock with humus in some ravines.	everywhere; rai is mixed with the bán along the Hajáwa path in compartment 6. The forest is usually pretty open save in ravines, and is often only half stocked and occupies mostly the sheltered and cooler slopes. There are a considerable number of 1st class and over-mature oaks. The forest has suffered from fires and many oaks have been damaged by lopping. Under-growth similar to that in Matkángra with some small ringáls near some of the streams.	grazing in several localities.	cultivation. Unassessed fields may be cultivated on payment of rent to the Forest Department and fresh land may be broken up in places where there is no forest growth.
Kulered ...	595	Occupies the left bank of the Suka gád and the slopes on the right bank of the Binár gad from the Ekra block to the Moru khad. The ground is fairly even and slopes moderate above the Binar gad, although often steep and sometimes precipitous in compartment 5; southerly slopes are very rugged, rocky and precipitous, but elsewhere, above the Suka gád, the slopes are more even and easier Main aspects southerly for the Suka gad and north-easterly for the Binár gad slopes	Usually over 45° in compartments 2 and 4; average about 40° in compartments 1, 3, and 5, and 35° in compartment 6.	...	Limestone much developed along the sharp-edged dhárs, huge blocks of this rock being scattered over the slopes above the Suka gád Beds of shale crop out here and there above the Binár gád. The sub-soil is a clay of variable depth, sometimes three feet deep in compartment 6. It is absent on crags and over nearly the whole of compartment 2, except along the nálas, whilst in compartment 4 the only soil is a sandy, very shallow loam between the interstices of the rocks The clay is usually covered by a somewhat thin layer of dark, loose loam. Humus is usually only found in moist places.	More than one-third of the block consists of open rocky or grassy blanks usually devoid of all tree growth, only 87 acres being fit for planting purposes. The remainder is an oak forest, the species being moru, bán, burána, ayár, and kokat. There is an appreciable sprinkling of rai in the upper part of compartment 5 Moru is common in the higher parts and in cool places, but bán is found throughout Burána and ayár are the most numerous species in compartment 1 and generally form an important part of the stock, but are less abundant on the slopes facing the north Kokát are found as in the preceding block. The forest occupies most of the northerly and westerly slopes and is very open in compartments 1 and 2, but fairly dense in compartments 3, 5, and 6. The blanks take up all southerly slopes as well as a few others above the Binár gád. The oaks near cultivation and in the lower parts of compartment 3 have been over-lopped.	Almost *nil* on southerly slopes and very scarce indeed on south-westerly and westerly ones, but usually some seedlings of the different species along nalas. Moru seedlings of different ages are as usual found under seed-bearers. On north-erly slopes in compartment 1 there are a good number of young moru, bán, and burána of all ages, the latter in most abundance, and in the lower part of compartment 3 there is very good advance growth of ayár and burána On the slopes facing the Binár gád reproduction is fair, but the oak seedlings in compartment 6 are much browsed by sheep and goats and reduced to a mere scrub.	Compartment 4 may be treated as a grazing ground and allowed to be burnt annually, but fire protection should be extended to the stocked areas in the other compartments. A stricter enforcement of the lopping rules to be carried out in compartment 3. All assessed cultivation has been included in the Sews and Tátri chaks, but cultivation may be permitted elsewhere, where there is no forest growth, on payment of rent.
Amlokri ...	581	Comprises all the slopes on the right bank of the Binár gád east of the Noru khad, as well as others (compartment 3) on the right flank of the Amlokri	Omitting precipitous ground usually, 45°, but below the wall of rocks in compartment 2, in places in compartment 1, and on the right bank of the	...	Limestone pierced in places by veins of black chert and mixed with shales in the lower portions near the Binár gád. The sub-soil is a sandy clay cropping out to the surface along	An oak forest in the stocked portions which occupy 320 acres, the species being moru, bán, ayár, burána, kokát, and a few inai. Moru is commonest along nalas, and bán occurs everywhere, as do also ayar and burána, although they are most abundant on north-easterly slopes; inai is met with along the	Usually *nil*, but there are a few seedlings of bán, moru, and kokat in the narrow strips along the nalas which escape being burnt.	Compartment 3 may be treated as a grazing-ground, but the remainder of the block should be fire-protected. One chak has been formed, called

		dhár down to the forest boundary The main dhár is very rugged and rocky, as also the whole of compartment 3, except some moderate even slopes on the right bank of the Banjuda nála. The minor spurs leading down to the Binár gád have sharp edges and steep sides, whilst bare, rocky walls crop out here and there all over the area, the most conspicuous being the one which runs through the middle of compartment 2 from east to west. General aspect north-easterly for the slopes on the right banks of the Binár gád and Bangoda nala, south-east for most of compartment 3.	Bangoda nalas 30°—45° average 35°.		dhárs and in blanks and the top soil on the slopes facing the Binár gád is a free, dark, rich loam, shallow in the higher portions and wanting on precipices, but from a half to one foot deep lower down. In compartment 3 soil is wanting over large areas, and where it exists in the upper parts it is a free, very shallow, sandy and stony loam. Humus is usually altogether wanting.	Binár and Khatwá gáds and kokát is found along nalas and is very abundant along the Binár gád The forest is usually dense along the Binár gád and its feeders and on northerly and north westerly slopes, but is often very open along dhárs and at north-easterly and easterly aspects, especially in compartment 3. There is a small chak of two acres, called Begi, just above the junction of the two gáds, and there are 196 acres of blanks, of which 133 acres may be classed as unproductive These blanks occupy the greater part of compartment 3, a broad strip along the Amlokri dhár and some smaller north-easterly and easterly slopes, and they are dotted in a few places only with a few mature bán. There are a fair number of 1st class trees of all species, but the smaller classes form a large proportion of the stock and a number of burans, ayár, and kokát, though not attaining large dimensions, are nevertheless exploitable Good, tall trees are found along the Binár gád and in the lower course of its feeders, but on the tops of dhars and precipices and generally in the higher parts the trees are stunted, much branched, and hollow, as is the case throughout compartment 3, where they are also excessively lopped. The ground is covered with grass and ferns and underforest, with some indigofera, desmodium, myrsine, sarcococca, brambles, &c., whilst in the middle of the blank in compartment 3 there are a few bushes of Euphorbia, Rhus and Rhamnus triquetrus.		Bogi Cultivation may be permitted as in Ekra and Kulered.
Dánda ...	237	Contains all the ground within forest limits on the right bank of the Hajáwa gád east of the Jaboá gád. The slopes above the latter stream are moderate and even and most of the dhárs are not prominent, but further east the ground is broken up by a number of rugged, sharp-edged dhárs alternating with dry and deep nalás, precipitous rocks cropping out along the main dhár and bare walls of rock occurring in places along the Hajáwa gád, whilst there are smaller precipices here and	Above the Jaboá gád 30° to 40°; average 35,° but farther east usually 45° and over, although in places as low as 35°.	...	Limestone with blue and grey shales of different degrees of friability and hardness. The sub-soil is a sandy clay cropping out along dhárs and on banks in the steep easterly portion, but deep and covered with a free, dark, rich loam on the slopes above the Jaboá gád and in the nalas. There is scarcely any humus, except a slight quantity along the Jaboá gád and its feeders.	An oak forest, the species being moru, bán, ayár, burans, and kokat with a few inai along the Hajáwa gád, a few, deodar near Banisna, and a few chir in the extreme east. Ayár and burans predominate numerically above the Jaboá gád, but owing to their consisting mostly of saplings and poles, their presence at a distance is not noticeable and the forest seems to consist almost entirely of moru and bán, the latter being most abundant along nalas and in moist places at the higher altitudes Bán predominates everywhere further east Kokát is very abundant along the two gáds and their feeders, consisting of Cornus macrophylla and capitata, hazel, alder, elm, the two horn-beams and some laurels, &c. The forest is well stocked above the Jaboá gád and also along the Hajawa gád, but in the steep eastern portion it is excessively open along dhárs and on easterly slopes. There are few 1st class trees in the west, but a fair number in the east, those of bán being more numerous than all the other kinds combined. Above the Jaboá gád the large oaks are tall,	On the whole very poor, but in the west there are established seedlings of all kinds along nalas and in other small moist areas which escape the annual fires, and just a few oak seedlings in one or two other places elsewhere.	Compartment 1 is to be worked for fuel after Darna, but this will not probably take place until after the end of the present plan. The block can be best tapped by a fuel road joining the one which ends at pillar No. 8 below the Chandúri peak. One chak has been demarcated, called Bhaijotya. Compartments 1 and 2 were fire-protected this year for the first time. Compartment 3 may perhaps eventually be formed into a simple grazing ground.

APPENDIX B

Description of Blocks—(continued).

Name of block	Area.	Configuration and aspect	Gradients	Altitude	Rock and soil.	Stock	Reproduction.	Treatments.
	Acres	there. General aspect, northerly with minor slopes facing the north-east and north west				vigorous and full-crowned and there are some sumlar trees along most nalas, but generally on the steep slopes in the east they are knotty and damaged by fires A number of kokat ban, ayar and burans which are below 1st class dimensions have reached maturity The ground is covered with grass in the more open parts, and with indigofera, desmodium, brambles, barberries, &c., along nalas, with small ringals along the two gads		
Hajawa	1,041	Occupies the head waters of the Hajawa g d, here known as the Gedi khad, as well as all slopes on the right bank of the gad and the basin of the Bodi gad, with the exception of a slope on the left bank below Chandurı. Most of the ground is workable and there are large areas of moderate and even slopes Rocky and precipitous ground occurs along most of the nalas, along parts of the main ridge and in the large blank in compartment 6 General aspect of compartments 1 to 5 northerly of compartment 6 southerly and of compartments 7 and 8 south westerly and easterly	Usually between 30° and 40° but in places over 45° and in high est part of compartment 2 often 20° only		The underlying rock is al most invariably limestone, mixed in the upper portion of compartment 6 with grey shales and in compartment 2 in places with red shales which are ferrugi nous near Ekra tiba, where there are large holes from which iron ore used to be excavated In compartment 5 near the Hajawa gad there is a bed of considerable thickness of blue and purple shales, the lower strata of which are slaty Thes bed during the rains becomes saturated with water and covered with a yellowish white efflorescence of alum salts The sub soil is clay often stiff and always mixed with fragments of limestone It is usually from two to three feet deep, and is covered in most places with a dark loose loam also fairly deep. There is a thick layer of humus under most of the stocked areas	Half the block, including almost the whole of compartments 1 2 3 and 4, a small part of compartment 6, and over one third of compartments 7 and 8, is a fir forest, ras predominating at the lower and morinda at the higher altitudes Just a few kail and deodar, mostly saplings and poles, are mixed with the firs in the lower parts deodar being common on some rocky southerly slopes near the Gedi khad A very small percentage of moru is usually mixed with the firs, except in the highest parts, and kokat occurs along the Hajawa gad In compartment 5 there is an oak forest, the species being chiefly saplings and poles of moru, ban, ayar, and kokat with some large oaks scattered through out Kokat are numerous at the bottom of the valley Over about half of compartment 6 and the upper portion of the Gedi khad, on slopes facing more or less south there is a dense crop of karshu saplings and poles with few mature trees , there is a slight mature of ras, except on the slopes below Tipra tiba, where the karshu is pure There are nearly 200 acres of open grassy blanks chiefly along the main ridge in compartment 7, in places along the Ekra ridge and in the lower westerly part of compartment 6, all but the latter area being suitable for planting purposes. The fir forest in compartments 1 to 4 is densest in the highest parts, becoming more open lower down the northerly slopes being the best stocked, whilst the edges of slopes facing the north east are either thinly clothed with trees or altogether bare, as are also many gullies in the upper parts. In compartment 5 slopes facing north are well stocked, whilst those facing east and north-east are either bare or thinly covered with trees The forest is densest near Hajawa gad and in other	The reproduction in compartments 1 to 4 is, on the whole unsatisfactory Fir seedlings, especially morinda, are plentiful along the Hajawa dhar and there is splendid advance growth of these species near Ekra tiba, but reproduction becomes much scarcer and more patchy lower down, being frequently altogether absent. Recent seedlings are very rare, being only found near blanks. Young moru are common near the few parent trees. In compartment 6, however, fir seedlings are sufficiently numerous, and their reproduction is very good in compartment 7, where the grassy blanks are also skirted with fir and oak seedlings The production of karshu is splendid. In compartment 5 the reproduction of ban is very unsatisfactory, but there are usually some young moru under the parent trees and in the lower parts which have escaped fires there is a sufficiency of young kokat and moru The grassy blank in the west of the same compartment contains a number of kail	Hajawa 1, 2, 3, and 4 were worked in 1879 82, but in the case of Hajawa 1 fellings were confined to the western portion and no oaks were cut in Hajawa 4. The selection fellings for fuel to be made during the next 20 years should be carried out in accordance with the scheme given in para. 142 and Hajawa 8 should be treated as a coppice three acres being coppiced annually *vide* para. 147 Hajawa 5 must be fire protected. Portions of the closed areas, Hajawa 1 to 4, should be sown or planted up in 1906 to 1908 The hacking of green kail for 'jogan' in compartment 5, which is contrary to the rules, should be stopped and the lopping rules must be more strictly enforced in the same place Thanks to the good reproduction in compartments 6 and 7, although open to graz

					moist places which have escaped fires, but elsewhere it is often very open The karshu forest is very dense as a rule, and this is the case for all the stocked portion of compartment 7. There are few mature karshu. The quality of the stock is fairly good and the firs reach a great height; but most of the large trees in compartments 5 and 6 are unsound, as also are many of the younger classes in the open parts of compartment 5, where fires prevail There is an undergrowth of brambles, indigofera, desmodium, willows, &c., in many places, especially in ravines, whilst large areas under the fir forest are covered with a dense herbaceous growth of strobilanthes, &c., during the rains.	and rai seedlings, but their growth is checked by fires and grazing, which give them a scrubby appearance.	ing, fellings can be made freely. The outer boundary has been slightly changed by shifting pillar 13. Hajáwa 8 should be closed to grazing
Dulána ...	815	Consists of the slopes on the right bank of the Suri khála and on the left bank of the Hajáwa gád as far west as a spur from the Moti dhár which runs down to the Gedi khad along the edge of the karshu and fir forest. It is divided by the rocky and rugged Moti dhár, into two very distinct portions. The slopes, on the right flank are very rocky and rugged with small bare precipices constantly cropping out and a sheer wall of rock some hundreds of feet high towering above the slopes below at the head of the dhar. Those on the left flank, on the contrary, are usually moderate and fairly even and are traversed by a number of rounded spurs and by several dry and shallow water-courses The chief aspects are northerly, north easterly, and easterly on the flank of the main dhár, southerly and south-westerly on its right flank.	Omitting precipitous ground 30° to 45°, average 35° to the left of the Moti dhár, going down to an average of 30° in the extreme east and up to 45° in places along the main dhár; usually over 45° in the higher parts to the right of the dhár, and in the lower 30° to 45°; average 40°.	...	Limestone forming all the bare precipices and much developed along the Moti dhár and occasionally mixed with slates; in the eastern and northern portions to the left of the dhar there are friable blue and grey shales. The sub-soil is a free clay on the left flank of the dhár, much developed in the eastern and northern portions, where it reaches a depth of three feet, and it is overlaid by a dark, rich loam deep in the west, but often altogether wanting towards the eastern boundary. On the right flank the soil where it exists is a free, rich and stony loam, but it is absent along the steep dhars and on precipitous ground There is a good deal of humus on the west above the Suri khala, but none on the right flank of the dhár.	A fir forest occupies 163 acres on the left flank of the Moti dhár, whilst below on the same side along the Suri khala and the outer boundary there are 59 acres of oak forest and a small patch very well stocked (one acre) of deodar saplings and poles near pillar No. 17. The only other stocked portion consists of 6 acres of two open patches of deodar mixed with some rai and moru just inside the fire-line above the Hajáwa gad Amongst the firs there are some oaks and kokat, morinda mixed with a little rai, karshu and moru predominating in the highest portions along the Moti dhár, and rai being the chief species lower down mixed with some moru, ban, and kokat. The oak forest is composed of moru and ban with some rai and the usual kokát. More than half the block consists of grassy and rocky blanks, of which 482 acres, all on the right flank of the Moti dhar and including the whole of compartment 4, may be classed as unproductive; on the left flank there are only 38 acres of grassy blanks, some of which are dotted with bán and rai, occurring along the main dhar, on one slope in the extreme west down to the Suri khala and a larger area just above the outer boundary in the east. Bangu thal, a chak of six acres, is situated near pillar 9. Most of the forest on the left flank of the dhar is well stocked, the density been particularly high in the upper northerly slopes, where morinda predominates, but in the lower easterly parts along dhára and near the outer boundary the forest is open, especially at easterly aspects Most of the morinda consist of saplings and poles, but there are a fair number of mature rai and oaks, especially along ravines, but many of the latter near the outer boundary are much injured by lopping, the mora being also generally hollow, although there are some fine, tall trees along the nalas. There are a few large karshu along the Moti	Nil on the right flank of the Moti dhár, except for a few deodar seedlings in the stocked patches and along dhára in their vicinity. On the left of the main dhár dense patches of morinda advance growth up to 10 feet in height, and with annual shoots a foot or more in length, are met with at the higher elevations, whilst lower down established young rai are common and are mixed with young moru on north-easterly slopes, and seedlings of the latter species are common in the oak forest; but along and for some distance from the outer boundary reproduction is poor, being represented by moru, ban, ayar, and burána seedlings much damaged by excessive grazing and occurring more or less in patches. Recent fir seedlings are generally wanting and there is no reproduction where the leaf-canopy prevents the admission of sufficient light.	Compartment 4 may be kept as a grazing-ground and allowed to be burnt annually. The rest must be fire-protected, as indeed is done now a new fire line having just been made between compartments 3 and 4. Only free grant trees will be required from this block. The outer boundary has been slightly changed around Khatwa and one chak formed, 'Bangu thát.'

APPENDIX B.

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres.					dhár, but most of the trees in the upper western portion are stunted and some of the rai are drying up, and there are scarcely any deodár fit for timber in the small stocked area above the Hajáwa gád. The under-growth in the fir and oak forests is in places very dense, consisting of willows, brambles, honey-suckle, indigofera, desmodium, skimmia, daphne, as well as a thick growth of ringáls in the upper parts; but to the right of the Moti dhár the ground is either bare or covered with grass and ferns with a few bushes of indigofera, desmodium, and brambles along the Gedi khad and under the stocked portion.		
Pandáwa ...	404	Comprises all the slopes from the main ridge between the Pandáwa gád and the Suri khala. The left bank of the Suri khala is rugged, being broken up by bare, rocky walls with some moderate slopes between; elsewhere the slopes are usually moderate and even with rounded dhárs and are traversed by a few shallow watercourses, one or two of which are perennial. There is a little precipitous ground along the Pandáwa gád, whilst on the northern side of the Suri dhár and on some of the grassy blanks the slopes are very gentle. The principal aspects are easterly, north-easterly, and south-easterly.	Excluding precipices, 20° to 45° on the left bank of the Suri khala; elsewhere in the upper parts and on some flat tops of dhárs and on grassy banks 20° to 30°, but along nálas and in some other places as high as 45°; average 35°.	..	Limestone with different colored shales which are ferruginous in places The sub-soil is a free, loamy clay strewn with fragments of rock and becomes somewhat stiff in the eastern part of compartment 3, where it generally crops out to the surface On the left bank of the Suri khala it has usually a very shallow loam resting on it, and there is no humus; but elsewhere the top soil is a free, dark, rich loam from a half to two feet deep, with a thick deposit of humus covering it in the stocked areas.	The stocked area consists of 117 acres of oak forest and 121 acres of fir forest. The former occupies two distinct portions of the block:—(1) The highest portion from the Tons road to the Suri dhár containing principally karshu of the younger classes, the karshu extending lower down on easterly and north-easterly slopes than on northerly and north-westerly ones, where it is mixed with young morinda. (2) A broad strip along the Pandáwa gád containing moru associated with rai and a few deodár and kail on the upper course of the gád and bán, moru, with an appreciable mixture of ayár, burána, and kokát in the lower portion The firs occupy the middle of the block north of the Suri dhár, kokát as usual is met with along the nálas. With the exception of the broad strip of oak forest along the Pandáwa gád, the whole of the left bank of the Suri khala is a grassy and rocky blank devoid of tree-growth except just above the stocked area, where there are a few oaks. A similar blank occupies most of the ground between the Suri dhár and its principal offshoot, whilst small blanks, mostly the sites of 'thatas,' are dotted here and there about the forest. These blanks altogether amount to 166 acres, of which 45 acres may be classed as unproductive. The forest is fairly well stocked amongst the young trees in the higher portions where fellings have not been made, but near the Public Works Department hut and lime-kilns and also along some of the dhárs and nálas in the lower part	In the karshu forest there is a good advance growth up to 10 feet high of karshu and morinda in patches and recent seedlings of karshu and a few morinda are also coming up. Reproduction of rai is rather poor, there being only a few small groups of seedlings far apart from each other. Along the gád in its upper course there are a good many established seedlings of moru and deodár, the former being usually close to the parent trees, whilst in the oak forest along the lower course of the gád there are both established and recent seedlings of bán, ayár, and burána, as well as a few moru near parent trees, but the young oaks are kept down by grazing. On the whole, reproduction is rather poor under forest, especially on northerly slopes in the higher portions and along nálas. Most of the grassy and rocky blanks have no reproduction of	This is to be kept for the supply of oak fuel to the Military Works' lime-kilns and the area under karshu should be closed to grazing. Three chaks have been formed which include all the assessed fields. The fuel must in future be delivered at the lime-kilns by this Department and not cut by the Military Works' contractor, as much damage is thereby caused to the forest. About three miles of fuel paths will be required.

						and in the oak forest in compartment 3, it is open, often very much so. The younger classes predominate greatly, especially those of karshu and morinda, and the number of mature trees is not very great, those of karshu being confined to the flat tops of dhárs and those of fir, chiefly rai, to ravines and to the lower parts, whilst some mature moru, bán, and deodár are scattered over the areas affected by these species. There are some tall and straight rai with long, clean boles, but the large oaks are unsound and along the lower course of the gád they are stunted and excessively lopped for fodder. The quality of the saplings and poles is generally good. The blanks are covered with grass and ferns, whilst under stock there are brambles, willows, honey-suckles, viburnums, barberries, sarcococca, &c., and ringáls.	any kind except in the east near forest, where there are some oak and rai seedlings of all sizes.	
Rikts	..	536	Comprises all the slopes on the left bank of the Pandáwa gád included within the forest boundary. It is traversed by two large and a number of small nálas, usually dry, and by several prominent dhárs with very sharp edges, whilst a high wall of bare precipitous rocks in the upper part closes most of it in on the north and east. It is also broken up breadthwise by a number of short, isolated, bare, and almost vertical precipices.	Excluding precipices, 30° to 45°, average 40°, gradients over 45° being most frequent east of the Ekuri khala.	...	Limestone in the higher parts and along spurs and shales in the lower parts and on easterly slopes. Covering the limestone there is a dry, free loam fairly deep where it exists, whilst lower down there is a coarse and very sandy clay, both soils being very stony. There is a slight amount of humus under stock, being most abundant in the east.	Most of the block, 249 acres, consists of grassy and rocky blanks, of which 149 acres of precipitous ground may be classed as unproductive, and the other portion of the blanks is only dotted in places with moru, bán, rai, or deodár. The stocked area comprises 55 acres of deodar along the upper courses of the two large nálas, 67 acres of fir forest in two detached portions above the deodar in compartment 3, and 22 acres of oak forest along the Pandáwa gád, running up for a short distance along the two principal tributaries, as well as two tiny patches of karshu below the Bhatáwa peak. The deodár forest contains an admixture of rai, moru, with a little karshu and morinda on the highest parts. The fir forest is composed of rai and morinda with a few moru and deodár on westerly and south-westerly slopes, whilst in the oak forest along the gad moru is the chief species, mixed with some deodár and rai, as far down as the junction of the Pandáwa gad with the Ekuri khala. There are a few kokat throughout the stocked areas, but they are mostly found along the nálas. West of the Ekuri khala the forest is open, often very much so, and the quality of the stock is poor; but to the east it is much better, being dense on north-westerly slopes in the upper portion, but open along dhárs and in many places in the detached pieces of forest in the south; on the whole it is more than half stocked, and there are a large number of saplings and poles, as well as a fair number of mature deodár, rai, moru, and bán. The conifers, however, are of a somewhat indifferent quality and the oaks are badly-grown, knotted, and somewhat stunted. The ground is directly covered with grass and ferns and a few indigofera and desmodium bushes along nálas and under forest. There are also a few clumps of ringál.	As a rule there is no reproduction in the grassy and rocky blanks, but in a few places there are some scattered seedlings of kail, deodár, rai, or moru, as for instance in a blank in the south-eastern corner. In the upper fir forest there is a dense though patchy advance growth of morinda mixed with established seedlings of rai. Save where the cover is too thick, deodár reproduction is fairly good along the Ekuri khala and above it on westerly and south-westerly slopes; but in the deodár patch to the west there are only a few patches of advance growth of the component species. In the strip of oak forest along the Pandáwa gad there are some moru, rai, and bán seedlings.	Selection fellings of deodár to be made after those in Kounin and girdling firs, &c., where necessary, to be undertaken in 1906.

Description of Blocks—(continued).

Name of block.	Area.	Configuration and aspect.	Gradient.	Altitude	Rock and soil.	Stock.	Reproduction.	Treatment.
Bajamára ..	Acres. 426	Comprises the slopes from the main ridge to the outer forest boundary between the Khopti dhár, the Daura gád, and the first large tributary of that stream on the right bank below Dingwa nala. It is furrowed by numerous deep and usually dry water-courses and is traversed by steep, often precipitous, dhárs above the Konain road, where the slopes are often very rugged and full of bare precipitous rocks, which, in the east, form conspicuous ledges. The slopes below the road are moderate, though also cut up by many nalas and dhárs. General aspect more or less northerly.	Above the lower Konain road usually 45° or over, although gradients of 30° to 45° occur, as for instance some of 30° near the Kharsawa chauki Below the road 30° to 45°, average 35°, but 45° on right of Khopti dhár and Dingwa nala.	...	Limestone predominates everywhere associated in places with shaly beds. A hard brittle rock, breaking up into angular fragments, crops out along some dhárs in compartment 2. The soil is a somewhat dark loam, free and rich, but shallow and wanting on precipitous, rocky ground. Humus of variable depth occurs in the stocked portions	Above the lower Konain road there is a forest of firs mixed with some deodár as well as kail, karshu, moru, and kokát. Rai is the most numerous of all the species and is found almost everywhere. It is usually mixed with some deodár, which predominates in the west associated with kail, these two species affecting most of the precipitous westerly slopes and not being uncommon on north-westerly ones. Karshu, mostly saplings and poles, occupies the main ridge, extending downwards for about eight chains near the Kharsawa chauki, whilst elsewhere in the highest parts, facing north and north-west, there is a forest of more or less pure young morinda. A sprinkling of moru exists in most places and along nálas there are abundant kokát, such as horse-chestnut, willows, Euonymus, kat-bhoj, and in compartment 1 a few bhoj-pattra. Below the road the western portion as far as pillar No. 14 is stocked mostly with saplings and poles of kail, intermixed with deodár, rai, moru, and a few mature bán. East of pillar 14 the stock occurs more or less in patches occupying north-easterly and northerly slopes, consisting mostly of rai, moru, and kokát, with a few walnut. About half this area, however, and the westerly slope on the right of the Dingwa nála above the road are blanks dotted with individual deodár, kail, rai, and a few oak, mostly mature trees, whilst in the upper courses of nalas there is no tree growth owing to the snow in winter, and the precipitous rocks form unproductive blanks Northerly and north-westerly slopes are well stocked, but the forest is very open along the Khopti dhar, on easterly and westerly slopes and on some north-easterly ones. The younger classes greatly predominate in the higher parts, but trees at the highest altitudes are frequently stunted and unsound There are some fine firs, tall, straight, and many of them with clean boles, especially on some northerly slopes in the lower parts and along nálas, where there are also some fine deodar and a few moru; but most of the mature deodár are much branched, especially those on precipitous slopes. In the open there are ferns and grass and a thick growth	Backward in the fir forest, where there are a few deodár, rai, and kokát seedlings; but in the higher parts, where the forest is denser, there is only advance growth of morinda, mostly in patches which are pretty frequent towards the east. There are karshu seedlings of all ages along the main ridge, but they are often stunted. The reproduction of kail and deodár is usually very satisfactory, there being patches of seedlings from a few inches up to 10 feet in height above the road in most places where there are openings above the road, whilst below the road there is very fine advance growth of both species. Patches of young moru are common near parent trees, and there are some established bán seedlings in the lowest portions of the block on easterly and westerly slopes.	To be worked for fuel after Kutniar. About five miles of fuel paths will be required. Fuel from the highest portion can probably be exported *viâ* the Tons road, but the rest should go *viâ* the lower Konain road. Cleanings amongst the young kail in compartment 2 to be made in 1895 and subsequently at intervals of five years if possible.

Leguna ...	924	Comprises the slopes from the main ridge to the outer forest boundary between the Bajamára and Konain blocks and bordering on the Karáli block along the ridge from pillar 24, 1st class forest, to outer boundary pillar 25. The ground draining into the Daura gád is steep and in places precipitous, being broken up by out-crops of the underlying rock. The left bank of the Leguna gád consists mainly of moderate, even slopes cut up by a number of nálas and smaller water-courses The slopes on the right bank, however, are steep, the dhárs being mostly sharp-edged with rugged sides, the ground above the upper Konain road being broken up by sheer walls of bare limestone rock from end to end. The aspect varies from north-west to south-west for slopes along the Daura gád, from west to south-west on the right bank of the Leguna gád, and more or less northerly on the left bank.	30° to 45°, average 35°, for the slopes above the Daura gád; 20° to 25° on left bank of Legúna gád below the lower Konain road and 30° to 40° above the road; 30° to 45°, average 40°, on the right bank; excluding precipitous ground above, 45°.	Limestone is the chief rock and is very prominent in the higher parts and along dhárs; it is mixed occasionally with beds of a soft blue shale. In the lowest parts along the Daura and Gatai gáds there are blue and grey shales overlying a very hard, quartzose rock which crops out below them and also in some places along dhárs. The soil on the slopes outside the fire line along the Daura gad is poor, shallow and very stony, but inside the line on north-westerly slopes there is a free and rich but shallow loam which is wanting on precipitous ground. In the rest of the block there is a subsoil of sandy clay deep on most northerly slopes and with a dark, fairly rich loam resting on it in ravines and on northerly and north-westerly slopes. There is no soil at all on much of the precipitous ground. There is a layer of humus on well-stocked areas facing more or less north, but none at all elsewhere or perhaps in places a layer of half decomposed needles.	of brambles, barberry, honeysuckles and other brushwood, with dead ringáls in most places. A little more than half the block is stocked. On the right bank of the Leguna gád there are patches aggregating 94 acres of deodár saplings and poles mixed with bán, buráns, ayár, and kail along the gád and the Koinan chak on westerly slopes and with rai and moru at north-westerly aspects. The small patches west of the chak are almost pure young deodár with just a few bán. Below the lower Konain road, on the left bank of the same stream, there are 69 acres of kail mixed with some deodár, moru, bán, and a few rai on northerly slopes. The fir forest is the most extensive, covering as it does 217 acres, mostly on the left bank of the gád with two patches on the right bank above the deodár. Morinda predominates in the higher and rai in the lower parts, where there is a mixture of deodár, which is most abundant on more or less southerly slopes, and also some moru. Most of this fir forest faces the north or north-west. The oaks occupy 87 acres, the highest portions of the block along the main ridge and the Tons road containing a more or less pure karshu forest mixed with a little morinda, whilst below the lower Konain road, adjoining the fire-line, there is a forest of moru, bán, rai, kokát, kail, and deodár, with a small patch of bán, buráns, and ayár outside the line. There are also 12 acres of buráns and ayár mixed with bán and kail along the Gatai gád below the kail forest. In the upper parts, chiefly in the fir forest, there are a large number of kokát, such as bird-cherry, horse-chestnut, maples, willows, katbhoj, &c., scattered everywhere, but most abundant along nálas. The rest of the block (or little less than half the area) consists of blanks. The slopes above the Daura gád with westerly and south-westerly aspects, including the whole area except four acres outside the fire-line, are grassy, rocky blanks dotted with a few solitary deodár, kail, rai, moru, bán, buráns, ayár, kokát, and a few chír in the lowest parts. There are also extensive blanks on the right flank of the Joátra dhár dotted with a few mature trees and including the fallow fields of Obri and Thuwa. There are very numerous blanks interspersed amongst patches of deodár, generally at south-westerly and southerly aspects, also dotted in many places with mature deodár, kail, bán, and rai. There is a large blank below Bageru láni in the fir forest, containing a few bird-cherry, whilst the upper courses of nálas, owing to the winter snows, are devoid of all tree-growth. The fir and karshu forests are dense on northerly and	Very satisfactory for kail and deodár, there being a sufficiency of seedlings almost everywhere on the slopes occupied by these species, the advance growth of kail being specially good below the lower road, mixed with numerous deodár seedlings: and some patches are very dense, the young plants growing vigorously. This reproduction is, however, often patchy east of the Koinan chak above the lower road, and west of the chak there is only some advance growth near the small patches of forest, most of the blank area having no reproduction at all, and there are no seedlings in compartment 1, which lies outside the fire-line. Reproduction is backward in the fir forest, there being a few established seedlings of rai in the lower parts and small patches of established young morinda near the upper limit of that species. There are also some recent fir seedlings on a few slopes facing west and on some blanks, but they are almost wanting at northerly aspects. There are some karshu seedlings along the main ridge, but often in insufficient numbers. Patches of young moru are common near the parent trees and bán, ayár, and buráns seedlings are pretty common in the lowest parts of compartments 2 and 7, but many of the first have been damaged by grazing	Legúna 1 to be kept as a grazing ground and allowed to be burnt annually, but the fire-line of Leguna 2 to be burnt along the Joátra dhár, so as to protect the whole compartment. Fellings for fuel to be made after those in Bajamára and the trees to be carefully selected where advance growth is plentiful, the block being open to grazing. The progress of the young kail in compartment 2 must be watched and certain areas added to the 'Thinning and Cleaning Scheme,' if necessary. Fuel to be exported *viâ* Bageru láni, the nearest route, and the necessary roads to be made with this object in view. A large chak, 'Koinan,' has been formed in compartment 3, and the patches of cultivation now lying fallow in compartment 2 have been exchanged for land in Karáli and for money not yet disbursed.

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Description of Blocks—(continued).

Name of block.	Area	Configuration and aspect.	Gradient.	Altitude	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres					north-westerly slopes, but often very open on westerly and south-westerly ones. In the deodár area the density is only high amongst patches of saplings and poles, whilst below the lower road it is very variable and never high, but improves rapidly in the kail area. A very large proportion of the stock consists of saplings and poles, especially kail, deodár, morinda, karshu, and kokát. As a rule there are but few mature trees except below the road, where there are a good many large deodár, kail, rai, moru and bán; but the conifers are much branched and often unsound, and there are but few good timber trees in the block, with the exception of some firs along nálas and karshu on some gentle slopes. Grass covers the blanks, as well as indigofera in places, and under trees there is a growth of brambles, desmodium, willows, ferns, barberry, &c., often very dense in the fir forest, where there is a rank herbaceous growth of strobilanthes, &c., in the rains. Ringáls are plentiful everywhere above the lower road on the cooler slopes.		
Kenain	522	This is a first class forest separately demarcated by 37 pillars. It is traversed from the bungalow to Tarrara tiba by the Saro dhár. The slopes on the left flank of this dhár are broken up by bare precipitous rocks sometimes forming walls, and having in consequence a very bleak and rugged appearance, especially just below Tarrara tiba; but immediately below the bungalow the slopes are steep, but not precipitous. The slopes on the right flank are moderate and even, but steep along nálas, whilst those adjoining the Tika dhár have flat	On left flank of the Saro dhár often precipitous but omitting precipices 30° to 45°, average 40°, with some gentle slopes near the bungalow. On the right flank precipitous only in most of compartment 8, along the sides of some nálas and in one or two other places, but usually 30° to 45°, average 35°; almost level near pillar 20 and some gentle slopes on the old Barai fields.		Limestone with beds of grey and blue shales in a few places. The sub-soil is usually a sandy clay, stony on the left flank of the Saro dhár, where it is absent on precipitous ground, from one to three feet deep on the right flank, stiff and stony in places near the Tika dhár. It is covered by a free loam deep only in ravines and moist places. There is a very thin layer of humus at southerly aspects, and a fairly deep layer on northerly slopes under stock, as well as some half decomposed needles.	Essentially a deodár forest, that species prevailing almost everywhere except in a few acres of fir forest at the highest point near Tarrara tiba, and a few acres of oak forest near the Siári gád., but even in these spots there are a few deodár. On the left flank of the Saro dhár the deodar occurs in almost pure patches separated from each other by extensive blanks. On the right flank in the upper half it is mixed with rai, this species often predominating on some small northerly slopes extending downwards along the nalas to the lowest points in the block. There are also a few kail in this upper portion, and it becomes more abundant lower down, where it even predominates in some patches. Kail and deodár saplings and poles are to be found growing together in dense masses along the lower part of the Saro dhár and the upper part of the Tika dhár. Scattered moru and kokát are found here and there all over the block, but the kokát is never abundant and is mostly confined to the nálas. There are some bán in the lowest parts, especially on slopes facing the east and north-east. Blanks occupy 240 acres, including more than half, the area on	About 80 acres of blanks have been planted up with deodár and most of the other blanks on the right flank of the Saro dhár are filling up rapidly with deodár and kail seedlings, save where there is dense brushwood; but on the left flank there is no reproduction over most of the blanks in compartments 1 and 3, although in compartment 2 there is very vigorous advance growth of deodar in patches, except on some slopes facing the south and south-east. There is very good advance growth of kail mixed with deodar along the Saro dhár just above the bungalow, and in fact generally where these two species are mixed together, the young plants	Se'ection fellings of deodár to be made after those in Karamba. Improvement fellings in compartments 4, 5, and 7 to be made in 1890 and succeeding years, but no oaks to be cut. Blanks to be planted up in accordance with the 'Plantation Scheme,' after Bodiár has been completely stocked. Girdlings of firs, &c., but not of oaks, to be made in compartments 3, 6, and 8 in the years 1899 and 1904. The oaks in this block are to be kept for lime-burning, and may be felled from time to time when required for this purpose.

		topped dhárs and shallow water-courses, in the upper part but sharp-edged rugged dhárs with steep sides near the lower boundary. The aspect is mostly southerly and south-westerly on the left flank of the Saro dhár, northerly, north-westerly, and north-easterly on the right flank			the left flank of the Saro dhár, most of the left bank of the Dhái nala, a large blank at Barai and numerous smaller areas. Some of these flanks are dotted with mature deodár, and in places with kail or bán, but others such as those in compartments 1 and 3, have no trees on them, save near stock The forest is often very open on more or less southerly aspects along most dhárs, near blanks and where old trees prevail, but it is fairly dense on northerly and north-westerly slopes, especially where the younger classes prevail, being here in places completely stocked. The fir forest is always dense. Saplings, poles and 3rd class trees form most of the stock, deodár and kail consisting chiefly of the two younger classes, whilst the mature trees are scattered mostly in the blanks There is however a fair proportion of mature deodár, kail, and rai in compartment 5. Most of the large deodár and kail are very branchy and knotty and unfit for timber, but there are some better trees in compartments 4 and 5. There are some good firs below Tarrara tibs and some fine rai lower down, especially along nálas. Most of the moru and bán are unsound Grass covers the soil in the open with ferns and indigofera, &c., on cool slopes, whilst there is the usual brushwood of brambles, indigofera, desmodium, &c., under forest with a dense herbaceous growth of strobilanthes on the higher slopes facing the north.	throwing up shoots up to 3 feet. Moru seedlings are plentiful near parent trees, so that reproduction is good almost everywhere and for all species except rai, of which there are only a few established seedlings here and there.	Cleanings amongst young kail to be carried out in compartments 4, 5, 7, and 8 according to the scheme in para. 177. Cattle trespassing in compartment 7 must be stopped The villagers of Konain are permitted to cut grass and undergrowth for their own use.
Marál	...	589	Comprises all the forest area west of the Siári gad and below and west of the Konain forest, just touching the Legúna block from 1st class pillar 24 to pillar 25 of the outer boundary. It is traversed lengthwise in about the middle by a cut fire-line. Above this line the slopes are usually moderate and even, and many of the dhárs are flat-topped, but below it, the ground is steeper and many of the dhárs are sharp-edged, whilst along the Gajrár dhár and west of the Tika dhár the ground is somewhat rugged, bare precipices cropping out here and there. The Dai páni and one or two other	Excluding the chaks, 30° to 45 and sometimes over along sides of nálas, the Gajrár dhár and west of the Tika dhár On an average 35° above the fire-line, 40° below it.	East of the Gajrár dhár, limestone abounds with beds of various-colored friable shales, but to the west of it shales predominate, pierced in places in the lower part by quartzose rocks, whilst lime stone occurs mainly along some dhárs on peaks and in the highest parts. The subsoil is usually a sandy, stony clay rather shallow along dhárs and on steep slopes or wanting on precipices, but deep along nálas. In some localities near the Tika dhar it is a stiffish clay cropping out along the dhárs and in grassy blanks. The top soil is loam shallow along dhars, on blanks and precipitous ground, but fairly deep on gentle slopes and along nálas. There is a slight quantity of humus under stock, but none below the fire-line.	The different types of forest in this block follow very closely the division into compartments: thus compartments 1 and 1a are stocked mainly with oak, compartment 2 with deodár, compartment 3 with kail, and compartment 4 with chír, and particulars of the composition of each is given in the descriptions of compartments 99 acres of the block are taken up by chaks and 120 by blanks, most of which are dotted with a few mature trees of the different species forming the stock. The most common kokát along the nálas are wild pear, holly, Cornus capitata, and macrophylla, with a few hill toon and Picrasma in the oak forest. The forest is open along most dhárs, in the chír forest and generally where the older classes prevail, whilst it is very open in the oak forest except along nálas, but is dense in the parts stocked with young kail and deodár. Above the fire-line saplings, poles and young trees greatly predominate and there are only a small percentage of mature trees, although there are a fair number of large kail in the upper western part, but 1st class trees, both of kail and deodár, are much branched and only a few are fit for timber; the younger classes are much more promising. There are a good number of 1st and 2nd class bán in the lower	Above the fire-line there is good reproduction of deodár and kail, the seedlings occurring over almost all the area, even in the blanks. In many places there is splendid advance growth of both species there being plants of all sizes up to 15 feet growing vigorously and more or less in dense patches. Bán and moru seedlings are also common where these species occur, but there are none in the blanks, and those that exist have many of them been damaged by grazing In the chír forest which is not protected from fire, there are just a few established young plants of ban, ayár and burans here and there, but those of chír are almost entirely wanting. In September last the ground was fairly covered with chír	Cleanings amongst young kail to be made in compartments 2 and 3, in accordance with the scheme given in para. 177. Free-grant trees only, will be required from this block for the next 20 years probably Compartment 1a to be brought under fire-protection. Five chaks have been formed, two of them Gaura and Kaner in exchange for other fields at Obri and Jhuwa in Legúna 2.

Description of Blocks—(continued).

Name of block	Area	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction	Treatment.
	Acres.	streams are perennial and the sides of nearly all the nálas are steep or precipitous in their lower course There are several chaks in the block, *viz.*, Jai, Gajrár, Kander, Gaura, and Dánda The chief aspects are northerly, north-westerly, and north-easterly				parts and along nálas, but they have suffered from lopping 1st and 2nd class chír are also fairly numerous, but their quality is not very good and many have been injured by fires Grass and ferns cover the blanks, whilst there is a brushwood of indigofera, wikstroemia, brambles, barberry, &c, along nálas and under stock generally, except in the chír forest, where there is mainly grass.	seedlings which had just germinated, but these will, doubtless, almost all be killed by the next fire	
Siári ..	431	Consists of the basin of the Siári gád with the exception of the portions included in the Konain and Kanali blocks The whole of the right flank is rugged, and the Bherimára dhár is full of angular blocks of the hard underlying rocks which crop out frequently along it, forming bare precipices. The slopes on the left bank are usually moderate and even, and are traversed by several tributaries of the gád, and by offshoots from the main ridge, a few only of which on either side are precipitous. Chief aspects south-westerly on the right bank and northerly on the left bank.	30° to 45°, but seldom under 40° on the right bank, average 35° on the left bank of the gád, with gradients as low as 20° in a few places only	...	Quartzites crop out abundantly along the Bherimára dhár and some of its offshoots and are associated with beds of various colored shales which predominate in the lower parts In the highest parts and all over the slopes on the left bank, there is limestone cropping out abundantly along some of the dhárs together with beds of soft, friable, bluish shales. On the right bank there is a free, very shallow loam absent on the steeper slopes, and bands of clayey soil crop out here and there; there is no humus On the left bank there is a sandy clay deep in places, but wanting on dhárs, whilst the top soil is a dark rich free loam covered with pretty much humus.	With the exception of 36 acres, the whole of the right bank of the gád is a grassy and rocky blank dotted with trees of bán, moru, deodár, ayár, buráns, kail and one or two rai with a few chír along the gád, the deodár, kail and ban often occurring in clumps of from 5 to 30 The remainder consists mostly of small badly-stocked patches containing the above species. On the left bank there are 22 acres of karshu forest, forming a narrow belt, a few chains wide, along the main ridge, but having a breadth of nearly 10 chains on westerly slopes; mixed with the oak and almost pure on northerly and north-easterly slopes is a fine growth of young morinda. Below the karahu belt there is a fir forest, rai generally predominating, though morinda is common in the higher parts along northerly slopes and along nálas, whilst moru is the most numerous in the lowest part near the gád Deodár is absent from northerly slopes and the sides of nálas, but is fairly common on westerly and north westerly aspects, especially at low elevations. Kokát, such as horse-chestnut, bird-cherry, maples, wild pear, hazel, &c., is pretty common along the nálas and also scattered over the higher slopes. Small blanks, the sites of 'thátas', are found in several places, and there is no tree-growth, as a rule in the beds of nálas The forest is rather open along dhárs and on slopes containing mostly mature trees, but is fairly dense on north westerly slopes or where saplings and poles abound The younger classes predominate	On the left bank outside the fire line almost *nil*, and above the line; there are only a few seedlings in the grassy blanks, but in the upper portion near stock there is a good advance growth of deodár To the right of the gád recent and established karshu seedlings are met with along the main ridge, but otherwise recent seedlings are wanting save for a few moru and deodár along the Siári gád. Established young fir are rare and when present occur in groups of 10 to 30 Those of deodár and moru are more common at low elevations usually on north-westerly slopes. There are a few kail seedlings near the Konain block	Selection fellings of rai for supplying timber to Chakráta to be made first in Siári 4 and then in Siári 3, the scantling being carried *vid* the old timber path to Kaluri, that on the Tons road The Chauluka thát (*vide* para 91) has been sown and planted up with deodár, but the result has not been satisfactory, the spot being more suited to the firs than deodar. Girdling operations should be carried out in Siári 3 and 4 in 1879, all 1st class rai fit for timber being spared The deodár in the block should be devoted to the supply of free grantees.

Gutu gád ...	513	Comprises the basin of the Gutu gád. The slopes on the right bank are very rugged and full of bare precipitous rocks often forming sheer walls, as, for example, just above the Tons road. To the left of the gád precipices are rare and the slopes are usually moderate and even, but are traversed by a number of dry water-courses with steep sides, and the dhárs are often sharp-edged, especially in the lowest parts. Prevailing aspects are south-westerly to the right, northerly and north-easterly to the left of the gád.	To the right of the gád 35° to 45° and over, being usually about 45°; to the left 25° to 45°; average 30° in the higher and 35° in the lower parts. These figures are exclusive of precipices.	...	In the higher parts shales are common with limestone along the dhárs and forming the precipices; in the lower portions hard, usually white quartzites abound, frequently accompanied by shales. The subsoil is a free, stony loam or sandy clay, to the left of the gád from one to two feet, but wanting on precipices; to the right of the gád it is very poor, dry and shallow, and altogether wanting on precipices and along dhárs. The top soil, which is usually absent on the right of the gád, is a dark, rich loam fairly deep in the higher portions and along nálas, but shallow where it occurs elsewhere. There is a thick layer of humus on more or less northerly slopes, but it is very slight or wanting at the exposed aspects.	greatly, but there is fair number of mature deodár, rai, and moru in compartment 3. Most of the large oaks are unsound, and the deodár are usually branchy and unfit for timber, although there are a few good trees to the left of the gád; the rai, on the contrary, are usually tall and straight with long clean boles. Most of the right bank is covered with grass, ferns and a few barberry bushes with indigofera, &c., in the upper parts, whilst on the left bank there are indigofera, desmodium, brambles, honeysuckles, barberries, &c., as well as numerous ringál and a rank growth of strobilanthes in the rains.	There is a narrow belt of karshu along the main ridge, and this species occurs mixed with others down to the Tons road and a little below it in places. The firs occupy 148 acres on the left bank of the gád below the karshu belt and, on the right flank of the Ningáli dhár. In the first area they are mixed with numerous small kokat, such as kath-boj, maples, willows, bird-cherry, viburnums, Pyrus Aria, &c., mainly confined to nálas and moist places, whilst in the second area they are associated with deodár along dhárs and on westerly slopes. On the south-westerly slopes above the Ningáli dhár, the stocked parts consist of 36 acres of deodár mixed with moru, karshu, and the firs. In the lower half of the block there are 226 acres of oak forest with usually some deodár, kail, firs, ayár, burúns, and kokát; moru occupies the higher and moister slopes and bán predominates in the lower portions. Lastly, at the very bottom of the block, below the fire-line, ayár and burúns predominate mixed with bán, and the usual kokát along the nálas, whilst there is an appreciable sprinkling of chír, kail, and moru. There are no blanks of any moment except on south-westerly slopes to the left of the gád, where there are 35 acres of grassy, rocky, and mostly precipitous ground, dotted usually with mature bán, moru or deodár. The karshu and fir forests are pretty dense throughout, especially on northerly slopes, and so also is the upper part of the oak forest, but the stock becomes open lower down amongst the bán and also below the fire-line, where it is only tolerably dense along nálas. Amongst the patches of deodár, the density is usually very slight. The stock consists mostly of saplings, poles and young trees on the upper slopes to the left of the gád, but elsewhere there is a fair number of mature trees of all the component species. Most of the large deodár are in the open blank, and are branchy and unfit for timber, but there are a few good trees in compartments 2 and 3. Tall and straight rai are common	Advance growth of karshu and morinda occurs in patches in the karshu belt and some established young rai are met with here and there, but seedlings are, as a rule, wanting on northerly slopes and along nálas, whilst recent seedlings of karshu and morinda are rare and those of rai almost altogether absent. Reproduction is very poor in the fir forest, recent seedlings being absent, except a few morinda, and there are only a few established young rai, deodár, and moru here and there with some patches of advance growth of morinda in the higher parts and on northerly slopes below the Ningáli dhár. It is much better in the oak forest, especially just above the fire-line, where there is good advance growth, both scattered and in patches, of kail, deodár, bán, ayár, and burúns, the seedlings being of all sizes up to 12 feet.	Selection fellings for rai to supply timber to Chakráta should be made in Gutu gád 2, after those in Sári, but otherwise the block should be chiefly utilised for supplying free grantees with timber. Girdling operations should be undertaken in compartment 3 in 1896.

Description of Blocks—(continued).

Name of block.	Area.	Rock and soil.	Gradient.	Altitude	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres.					in the fir forest and there are some fine oaks, although many are unsound On cooler slopes under forest is a dense growth of indigofera, roses, brambles, strobilanthes, &c., with numerous ringáls. In the open and at warm aspects there is grass, with some ferns, indigofera, and desmodium.		
Bhujkoti .	330	Occupies the whole of the slopes on the left bank of the Bhujkoti gád. It is traversed by two large nálas and and several smaller ones and by a succession of minor spurs from the main ridge Most of the ground is fairly even, but some slopes and the sides of nálas are steep, whilst in places precipitous rocks crop out. The principal aspects are northerly and north-westerly, but others are represented.	35° to 45° ; average 40°, but less above the Tons road.	...	Limestone with various colored shales predominate in the higher parts and along dhárs, but quartzose rocks mixed with bluish shales are prominent along nálas and in the lower parts. The sub-soil is a sandy clay fairly deep and cropping out to the surface along dhárs The top soil is a dark, free, rich loam from a half to over a foot deep, strewn along nálas with fragments of rock, and above it there is a pretty thick layer of humus	Karshu caps the Terona peak, extending all along the main ridge and below the peak, descending down to the Tons road on westerly and south-westerly slopes. Along the main ridge it is associated with morinda and a few rai, but on secondary spurs and at westerly and south-westerly aspects there are a good many deodár In the lower western portion there is an oak forest of moru and bán mixed with ayar, burans and kail as well as with a few deodár. Over the remaining and much the larger portion of the block (274 acres), there is a fine forest of the two firs with a mixture of other species, *viz.*, karshu above the Tons road, deodár and moru throughout the former, chiefly on dhárs and at westerly and north-westerly aspects, the latter along the gad and in other moist places. Morinda is most numerous on northerly slopes in the higher parts, rai at similar aspects lower down There are a large number of kokát, which are particularly abundant along nálas, but they are of small dimensions; amongst others are bird-cherry, maples, horse-chestnut, hazel, horn-beam, viburnum, Euonymus, Pyrus Aria, kat-bhoj, and bhoj-pattra. The forest is very well stocked, the density being in places complete, but it is rather open in the west and also on westerly and south-westerly slopes above the Tons road There is a blank in compartment 1, called 'Kainju thát,' used for herding sheep during the rains The younger classes form a large proportion of the stock, but there are a good number of mature trees of the principal kinds, many of which are tall and straight with good clean boles, and quite fit for timber. although hollow trees are frequent, especially amongst the oaks, and most of the large trees above the road are not very good. There is very little grass, but an undergrowth of	In the karshu forest there are some small patches of morinda advance growth on northerly slopes, whilst there are all sized seedlings of kail and deodar along dhárs and at westerly aspects. In the lower oak forest along the gad there are a good many established seedlings of kail mixed with deodar, bán, and some moru In the fir forest reproduction is backward, there being only a few established fir seedlings scattered here and there, but there are some established young deodár along dhárs and on westerly and north-westerly slopes, and moru seedlings near parent trees, whilst adjoining the oak forest young deodár plants up to 12 feet in height are common, recent seedlings, especially those of the firs are almost entirely absent, which is doubtless mainly due to the dense leaf-canopy.	Nothing required in compartment 1, but in the remainder girdlings of firs and oaks, &c., should be made in 1900 and 1901, good 1st class rai fit for timber being, as a rule, spared. Timber for free grantees to be given from this block in accordance with Appendix I

						skimmia, daphne, honey suckles, brambles, strobilanthes and ferns, ringals occur in places		
Karámba	2,155	Comprises the slopes on the right bank of the Bashair gad from the watershed line down to a prominent spur which runs down to the gád from pillar No It consists of a portion of the head waters of the gad as well as the basins of four large tributaries. It is traversed by numerous dhárs which are prominent in the extreme west and somewhat flat topped elsewhere, but the dhár forming the eastern boundary is in places rugged and precipitous There are also many small usually dry nálas with steep sides. The narrow left bank of the nála in compartment 3 is precipitous General aspect northerly with modifications to the north-east, north west, east and south east, easterly aspects being common in the extreme west, whilst there are a few westerly slopes in the extreme east.	In the karshu forest and at the western and eastern extremities 30° to 45,° average nearly 40,° elsewhere from 20° or 30,° along dhárs to 45° and over along the sides of nalas	..	Limestone with some shales in the lowest parts along the gád The sub-soil is clay much developed along dhars and varying in depth from one to three feet The top-soil is a dark, rich loam, from one to two feet deep, except along the ridge and some of the sharp-edged dhars where it is wanting There is a good deal of humus under the forest as a rule, but none along many of the dhars and in blanks	Compartment 1 is a karshu forest with a good many deodár of all sizes mixed in the western part, whilst elsewhere in the upper parts there is a dense forest of firs mixed with moru along nalas, whilst along the gád and in the lower parts generally moru predominates and the firs are less numerous, as they are also in the extreme east, where the stock consists of moru bán, ayár, and burans, together with a few deodár scattered everywhere except along nalas Some deodar occurs throughout the block except in the highest parts of the karshu forest, and this species predominates in the western portion of compartment 3 at all aspects except the northerly, whilst it is also usually present in appreciable numbers on all easterly and south easterly slopes, and in the lower parts on north easterly and north westerly ones as well and also along the dhars. There are some grassy and rocky blanks often dotted with a few mature moru, deodar, kail and ban They occur on nearly all the easterly and south easterly slopes in compartments 2 3, and 4. There is a considerable number of mature deodár, many of which are tall and straight with long, clean boles, especially those at north easterly and north westerly slopes, whilst most of those along dhárs and in grassy blanks are much branched, knotty, and often rather stunted There is grass in the open and a dense growth of desmodium indigofera brambles, barberries, &c, in many places as well as a rank growth of strobilanthes and other herbs in the rains Ringals also are common.	Usually good both for karshu and deodár there being seedlings of all sizes from a few inches up to 12 feet in height, occurring most abundantly and in patches along dhars and in the more open parts, whilst they are generally scattered on the cooler slopes In the western part of compartment 3 the reproduction of deodar is splendid, but towards the east in compartments 5 and 6 it is rather poor, advance growth occurring chiefly in patches along the main ridge whilst there are some established seedlings at north-easterly aspects Established seedlings of rai and moru are also common in places, and there are some patches of advance growth of morunda in the higher parts Many of the deodar seedlings in the fir forest are being suppressed.	Karamba 1 should be set aside for the supply of oak fuel to the Military Works' lime kilns after the supply at Pandawa has been exhausted. Selection fellings of deodár for Chakrata should be made in Karamba 2, 3, and 4, and 12 free grant trees according to the list in Appendix I should be given away annually from compartments 5 and 6. Girdlings of firs and oaks should be made as laid down in the Thinning Scheme, but good 1st class rai fit for timber should, as a rule, be spared.
Pánu ka nal	891	...	...	...	Has not been described			Trees for free grantees will be given from this block according to Appendix I Girdling operations where necessary to be undertaken in 1902 This block might eventually be worked with the deodar areas in the Dhara gad banu
				KÁLSI FOREST				
Panjgaon (part of)	806	Comprises all land with in forest limits below a cut line and between the Bana gad and a nála passing near	In the hilly parts 20° to 45,° usually about 30°, precipitous along the Amlawa.		Variable along the Amláwa there are some very compact shales and higher up there are some highly metamorphosed hard crystal	In the hilly ground above the chaor there are some mature bákli, gosam, jingan, haldu, bel, kumbh, &c, with an understage of inferior kokat, such as kuri, karaunda, mendal, and ber The chaor is densely covered with kokát	Very backward for bakli, haldu, and superior kokát, scarcely any seedlings being found, better for gosam, there being a fair number	To be treated on the coppice with standard system as per scheme in para. 169

APPENDIX B.

Description of Blocks—(continued).

Name of block	Area.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres.				KÁLSI FOREST—(*concluded*).			
		pillar No. 27. It consists of hilly ground (over the greater area) with a more or less level stretch of land or chaor at the foot, a detached hill south of this chaor and a high bank along the Amláwa and the southern boundary General aspect south-westerly.			line rocks and other beds of shale and sandstone, whilst in places red marl is exposed by landslips. The detached hill is formed of a soft, coarse, micaceous sandstone, and is evidently a continuation of the spur on the opposite bank, having been detached from it by the Amláwa. The sandstone is overlaid in places by a thick bed of boulders, which become very prominent all along the high bank in the south. The soil is a dry, loose, sandy loam mixed with rock fragments, shallow on ridges, but deep on the chaor, where it is mixed with boulders of all sizes.	such as rauni, karaunda, mendal, ber, amaltás, &c., over-topped by some large haldu and bargat trees. There are also three small sál patches at the foot of the hill, each about an acre in extent and containing chiefly saplings and poles. Young sál also covers the top of the detached hill together with a few young sain, whilst its sides are clothed with kokát and a few large bákli, haldu, and gosam here and there. Khair is found along the Amláwa. The forest is open in the higher parts, and often very open along ridges, becoming denser near nálas. It is fairly dense in the sál areas and very dense in the scrub-occupying chaor Most of the mature trees are unsound, caused probably by many being long past maturity and also by the practice of lopping The young sál are, however, often of very fair quality Amongst climbers, Combretum decandrum is common along nálas and on moist slopes in the lower parts; it is very injurious to tree-growth, maljan and goi are found in small numbers, and Pueraria tuberosa is abundant, but not injurious. The ground is covered immediately with grass along the ridges and elsewhere with leaves only or in places with an undergrowth of Helicteres, Justicia, &c.	of seedlings 3 feet and upwards in height. There are also a small number of seedlings of bel, kuri, sándan, mendal, and karaunda, and in the sál patches there are numerous recent seedlings of that species, but it is to be feared most of them will be trodden down by cattle. There are pretty many khair seedlings along the Amláwa.	
Paralágh	451	Comprises all slopes on the left bank of the Amláwa within forest limits north of the Bana gad. Mostly precipitous ground, full of landslips along the Amláwa throughout compartment 4. Higher up steep, but not so precipitous, and fairly even and moderate slopes over most of compartment 2 General aspect south westerly.	Precipitous in compartment 4 and in some other places; elsewhere varying from an average of 30° in compartment 1 to 45° in compartment 3.		Compact shales, in places ferruginous and mixed with large blocks of a crystalline volcanic rock. In one or two places along the Amláwa beds of a crystalline limestone are also met with; red marl is exposed by landslips. The soil is a dry, loose, shallow, sandy loam mixed with fragments of rock and particularly shallow and sandy in compartment 3.	The stock consists of mature bákli, gosam, jingan, dhebri, &c, and some sain in compartments 1 and 2 with an understage of inferior kokát, whilst there are also some haldu in the lower parts. Kuri is conspicuous all over the block, especially in the higher and stonier parts. Tushári, gainti, and bel predominate along the Bana gád. The central portion of compartment 1 is a sapling and pole forest of sál with some sain, harra, haldu, bákli, gosam, and sándan; there are a few large mango near pillar 25 Except in the sál area and along nálas, the forest is usually very open and in compartment 3 near the Amláwa: the slopes are only dotted with trees. Large trees are usually unsound and the quality of the stock generally is very	Usually backward, especially in compartment 3. Bákli seedlings are nearly always absent and there are usually only a few kokat seedlings here and there. The sal area, however, is literally covered with recent seedlings of sál with a few large ones from 3 to 5 feet high.	Compartments 1 and 2 to be treated on the coppice with standards system as per scheme in para. 169. No green trees to be felled in compartments 3 and 4.

						poor. In the sál area, the young trees, though numerous, are not well grown. Combretum decandrum is very abundant along nálas and in the lower parts, and maljan is pretty common in places. The ground is covered with grass or bare owing to landslips, or there is an undergrowth of Helicteres, Murraya, &c.		
Haripúr (including Khádar).	1,158	Occupies the slopes of the isolated Haripúr ridge running from Kálsi to the Tons and of its off shoot towards the Amláwa, as well as some hilly ground to the north from a ridge between pillar 7 near Khádar Khera and pillar 34, eastward to the outer boundary and to the boundary of the Amláwa block just above Kálsi It also includes some level ground near the Tons and smaller level areas along the cart-road. The top of the Haripúr ridge and its chief spur is broad and more or less flat. About half the block faces south and south-east, half north and north-west, but other aspects also occur.	20° to 45° in hilly parts, but the commonest gradient is about 30°, the sides of nálas being steeper as well as most of the ground above the great bend in the cart-road Gentler slopes occur in the sál area and the western part of compartment 10.	...	The rock forming the Haripúr ridge and the slopes on either side is a soft, micaceous sandstone, harder in places as in compartment 12 near the Tons where there is a valuable quarry. Angular pieces of this sandstone are mixed with the soil, which is dry, sandy and shallow. There are often huge blocks of it in the upper parts, and bands of clay crop out at the top of the hill where there are also in places beds of brown or red marl disintegrating into small pieces on exposure. North of the ridge there are shales of various colors with a hard, compact crystalline rock cropping out along the edges of spurs. In compartments 10 and 11 there are a few beds of bluish, crystalline limestone, as, for example, near pillar 30. The soil in this part is a dry, coarse sand mixed with a small percentage of loam. On the flat ground near the Tons there is a very thick deposit of boulders and sand mixed with silt, whilst a clayey soil crops out in some places.	Along the flattened top of the Haripúr ridge and its main spur, extending down the slopes on northerly and westerly aspects for a distance of five chains or over and occupying the whole of compartment 14, is a forest of sál saplings and poles mixed with some saplings of sain and a few trees of bákli, gosam, debri, jáman, katbhilawa, jingan, &c Elsewhere the hilly ground contains a mixed stock of bákli, gosam, haldu, sain, sandan and large kokát, such as bahera, jingan, dhebri, jáman, kaim and a few mohwa, all these species being represented by a large proportion of mature trees, together with a lower stage of scrub growth of inferior kokát, the most common being kuri, karaunda, ber, chila and mendal Haldu and kaim are commonest at the foot of the hills, debri and jáman along nálas, kuri in the upper stonier parts and the other inferior kokat along nálas, and in the lower parts generally There are a few specimens of Diospyros embryopteris along the nála, bounding compartments 2 and 3 Along the bank of the Tons there is a very large number of kokát, pula, wendlandia, gainti, kuchnar. The level ground and the gentle slopes of compartments 9 and 10 are stocked for the most part with a dense scrub of inferior kokát overtopped here and there by a few large haldu, pipal, jáman and an occasional mango. This dense scrub is occasionally interrupted by open blanks, and is chiefly composed of rauni, kura, mendal, karaunda, ber and chila The forest is fairly dense in the sál area, rather open on more or less southerly slopes, especially along the edge of secondary spurs, but denser near nálas It is very open or dotted only with trees in the east of compartment 10 and in precipitous places in compartment 11. It is usually dense on northerly and westerly slopes above the Tons, especially in compartments 13 to 15 With the exception of haldu, pipal, mango, and a few others on level ground, few trees attain large dimensions and far the greater part of the 1st class trees and a large proportion of the 2nd class are crooked, unsound and often stunted The best compartments face the Tons and there are some very fair young sál in compartment 14. Combretum decandrum does much damage in nálas and in the lower parts.	Very good for sal there being in places good advance growth 3 to 5 feet high, and everywhere innumerable yearlings, the ground being literally covered with them in compartment 14 but it is feared they will be trodden down by cattle. There are also some young sain in the sál area. In the hilly ground outside the sál area reproduction is as a rule indifferent and recent seedlings are often totally absent whilst there are established seedlings in insufficient, numbers of gosam, kokat and others those of bákli and huldu being the rarest. Reproduction is especially backward in compartments 10—13 whilst on the level ground save for a few established inferior young kokát, seedlings are totally absent.	Compartments 1—7 and 13—16 to be treated on the coppice with standards system as per scheme in para. 169. Compartments 8—12 excluded from this treatment on account of their proximity to Kálsi, 17 and 18 on account of the grazing requirements of Haripur A small quantity of green fuel for lime burning not exceeding 3,000 stacked cubic feet annually may be cut from compartments 8—12 but only dry wood should removed from compartments 17 and 18.

APPENDIX B.

Description of Blocks—(continued).

Name of block	Area.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres.				CANTONMENT FORESTS.			
Lurli ...	290	Comprises the slopes within cantonment boundaries below the cart-road from the Mathangra block to the hospital spur down to pillar No 124 Precipices are almost entirely absent, although the sides of nalas are rather steep. General aspect westerly with modifications to the north and north-west, south and south-west	From 30° up to 45° in some places and along nalas; average 35°.	5,750′ to 7,250′.	Grey and bluish shales pierced along dhárs by a hard, metamorphic rock The sub-soil is clay, rather stiff along dhars and in open places, but free in the lower slopes and mixed with fragments of rocks. The top-soil is a free, dark, loam very shallow or even wanting along dhárs and in open blanks but up to a foot deep in stocked portions. There is a thin coating of humus on northerly and north-westerly slopes.	The stocked areas contain a scrub of ayár and burans overtopped by bán and morn, the latter chiefly along nalas where there are also numerous kokát, such as Cornus capitata and macrophylla, Eunsyrnus pendnlus, Morus serrata, poplar, willow, bully, wild pear, &c. The forest on the whole is about half stocked, being often excessively open along dhárs and at exposed aspects, but generally dense along nálas and on northerly and north-westerly slopes. There are grassy blanks occupying most of the slopes facing the south and south-west, as well as strips along the southern-most dhar and some very small patches scattered over the block. These blanks are either dotted with a few solitary bán, ayár, and burans chiefly along nalas or they are devoid of tree growth. The saplings, poles and young trees bear a fair proportion to each other, but the number of 1st class trees is rather small, and they are mostly bán, which are rather stunted along many of the dhárs and in the extreme west, although on northerly slopes they are tall and vigorous, but knotty. There is the usual grass at warm aspects, together with an under-growth of brambles, barberry, indigofera, desmodium, &c, on northerly and north-westerly slopes.	Good for most species, there being seedlings of all sizes from recent ones to young plants 10 feet high. These seedlings are numerous along dhars, also in the extreme west and generally where the leaf canopy is rather open, but the grassy blanks possess very few established seedlings. The young plants are usually vigorous, but near the western boundary they have bushy crowns, which is doubtless due to grazing in the past. A few kail seedlings are beginning to appear here and there in open places.	If the other cantonment blocks are leased, fellings of unsound trees should first be made here in accordance with para. 166 and planting work should be carried on until all the blanks are restocked, Rs 200 being spent annually.
Soitoli ...	188	Occupies the slopes underneath the bazár and below the Kailana dák bungalow road, down to the cantonment boundary and is bounded on the north and south by a number of pillars. Chief aspects north-westerly and north-easterly.	30° to 45,° average 35°; somewhat higher in the lower portions, but in places where the dhárs are flat-topped as low as 20°.	5,750′ to 6,750′.	Various colored shales and in the higher portions quartzose rocks as well crop out in abundance. Bands of stiff clay crop out constantly along dhárs and here and there in the grassy blanks as well, but on the stocked slopes free, sandy loam forms both sub-soil and top-soil In nalas the loam is dark, rich, and covered with a small quantity of humus.	Consists of an under-stage of ayár and burans, overtopped by a forest of bán. The kokát along the nálas consists of Cornus capitrata and macrophylla, Euonymus, sp. poplar, hoinbeam, willows, &c. The forest is extremely open in the higher parts below the bázar and along some dhárs, but is pretty dense in ravines. There are some grassy blanks just below the bázar and also on the right flank of a prominent dhár which runs through the middle of the compartment, the slopes below the bázar containing patches of ban, ayár and burans along nálas and on northerly or north-westerly slopes and dotted with trees of all sizes on north-easterly ones, whilst the right flank of the prominent dhár just mentioned is mostly without any tree-growth except along the	Very good for all species in patches all over the stocked areas, the seedlings being of all sizes up to 10 feet in height. Reproduction is not good in the grassy blanks, there being no seedlings in the middle and a few established ones only along the edge of the stock Seedlings are also rare in the nalas, but where they occur are vigorous. though branchy, which is doubtless due to former grazing.	Unsound trees to be removed in two instalments, the first instalment being felled after similar fellings have been finished in Lurli. All blanks to be filled after Lurli has been first fully stocked.

						nálas in the upper half, where there are a few trees of all kinds. A good proportion of the stock consists of 1st class trees, especially bán, that species predominating along nálas and on small areas facing north. The ayár and burána even mature ones are short and crooked. There is chiefly grass in the open blanks, and grass, ferns, brambles, desmodium, &c., under cover, with the small ringál in nalas.		
Chilmeri ...	568	Situated in the eastern part of cantonments close to the rifle range, from the boundary westwards to a spur running down from Chilmeri neck, being bounded on the south by the Thana Danda. The chief dhárs are flat-topped. The sides of the nálas in the lower half of the block become steep and there are two or three small landslips, but otherwise precipices are mostly wanting. Predominating aspects northerly and north-westerly. There are small patches of cultivation scattered over the block.	Moderate in the higher parts, but exceeding 45° in places along nálas and in the east. The average is about 30°, but it varies from 20° to 40°.	...	Bluish friable shales and quartzose rocks prevail all over the block, the former predominating in the higher portions and the latter along dhárs and in the lower parts. The subsoil is clay 1 to 4 feet deep and much developed along dhárs where it becomes somewhat stiff. On the stocked areas it contains a large percentage of a rich, dark loam which in places attains a depth of 2 to 3 feet and occasionally totally replaces the clay. There is a thin layer of humus on well-clothed northerly slopes.	The right flanks of dhárs facing east and south-east are grassy blanks without any tree-growth in the lower portions, but dotted with a few bán, ayár and burána higher up and fringed with a good many trees of the above species and of kokat along the larger nálas. A narrow strip of land along the Thana Danda is also a grassy blank with only a few trees here and there, the rest of the block is stocked with bán, ayar, burána, and kokat. It is, however, interspersed with small grassy blanks here and there, more especially along the dhárs, which in some cases are sites of old cultivation and in others are resting-places for cattle. The number of ayár and burána is somewhat in excess of bán, which, however, predominates along the nálas and generally in the higher portions. There are a sufficient number of 1st and 2nd class bán and burána, though the greater proportion of the stock consists of saplings and poles. The kokat, which occurs chiefly along nálas, consists of Cornus capitata and macrophylla, Euonymus sp., elm, holly, &c. The forest is very open along dhárs, but fairly dense in nálas. The oaks are healthy and possess large high crowns, lopping being prohibited. There is a good deal of grass and an undergrowth of daphne, sarcococca, wikstræmia, barberry, brambles, indigofera, desmodium, &c., with the small ringál in the lower parts and along the moist nálas.	Advance growth of bán with seedlings up to ten feet in height, is found all over the block except on the grassy, treeless blanks. It occurs more or less in patches which are often very dense, but along dhars and on small grassy blanks there are not many seedlings. The young bán are excessively browsed by cattle, except on steep places, and are in some spots reduced to mere bushes. There are also numerous seedlings of ayár and burána, both scattered and in patches, and they are in places more numerous than those of bán, though on the whole seedlings of the latter predominate. Recent seedlings of the different species are only found occasionally here and there.	The work detailed under the heading 'Cantonment working circle' should be carried out, *vide* paras. 162-166.
Patiadhár ...	429	Comprises the slopes below the upper road between the Chilmeri and Sootoli blocks. There are no precipices but the sides of nalas are steep in places. The prevailing aspects are north-east and east on the right flanks, north and north-west on the left flanks of dhárs.	25° to 45°; average 35°, but steeper along nálas. There are gentler gradients along one or two of the dhárs.	...	As in the preceding block,	Nearly half the block is taken up by grassy blanks, occupying the right flanks of dhárs with easterly, south-easterly, and southerly aspects and dotted with only a few bán, ayar, and burána here and there. The slopes facing the north, north-east, and north-west are stocked with the species named above and the usual kokát. The stock is very similar to that in the Chilmeri block, the mature trees bearing a slightly larger proportion to the saplings and poles than in the preceding ones. Lopping is only practised to a slight extent and most of the trees are healthy-looking with large full crowns. Saplings and poles are most numerous in the lower portions. The forest is usually rather open. The tops of the chief dhárs are occupied by fields.	As in the preceding block, but the seedlings of ayár and burára are more numerous than those of bán, the latter being much injured by grazing.	Ditto.

APPENDIX B.

Description of Blocks—(concluded).

Name of block.	Area.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
	Acres.				CANTONMENT FORESTS—(*concluded*).			
Forest Garden ...	48	.	. .	...	...	About 20 acres stocked with oak forests; the remainder consists of grassy slopes which are being filled up with fruit and exotic trees or are used for growing vegetables.	.	The work detailed under the heading 'Cantonment working circle' should be carried out, *vide* paras. 162-166.
Gobráni ...	210	Comprised between a prominent spur from the Westmoreland gardens and a spur running up from pillar No. 12 to near the Parade-ground, being bounded on the west by the lower road from Morrow's Neck and on the east by the cantonment boundary line. There are no precipices, but sides of some of the náls are very steep.	As in Patiadhár ...	.	Shales and quartzose rocks prevail all over the block, but along the dhár from pillar 12 to the Parade-ground a little limestone is met with.	A large portion of the slopes occupying the left of the nála which runs through the middle of the block consists of grassy blanks with only a few scattered bán. The rest is, more or less uniformly stocked with bán, ayar, buráns, and kokat. Ban predominates over the whole of the stocked area, ayár and buráns being found on easterly, north-easterly, and westerly slopes, in the lower portions, extending in smaller numbers to the highest parts. There are a good number of mature bán and the stock is more vigorous than that in the two preceding compartments. In the lower portions facing north-west andwest large trees are few, but there are numerous saplings, poles, and young trees. Kokát is represented by Cornus, Euonymus symplocos, willows, laurels, &c On the whole ethe block is more than half stocked.	Very fine advance growth of bán in many places. The grassy blanks, however, do not contain many seedlings. Ayár and burans seedlings are also very common. Grazing has much damaged the reproduction.	Ditto.

APPENDIX C.

Description of Compartments.

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect	Gradient	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Kua ...	1	66	...	...	...	. .	Only one compartment, *vide* description of blocks		
Singhori ...	1	97	Occupies the northern half of the block, being separated from compartment 2 by a small nála running between pillars 2 and 3. Precipices are, as a rule, wanting, but the sides of nálas are steep. General aspect more or less north-westerly, with modifications to the north-west and south-west.	30° to 45°, average 40°	...	Blue shales and slaty rocks. The soil is a loose, sandy clay containing a large proportion of loam and mixed with fragments of the underlying rock. It is pretty deep save where the underlying rocks crop out.	About ten acres of parts of slopes facing the south-west are grassy blanks containing a few individual ayár, burans and ban standing far apart from each other The rest of the compartment is stocked with the above three species with an insignificant number of kokát, such as Cornus capitata, Myrica sapida, Euonymus (sp.), &c. Ayár and burans combined predominate throughout except on small portions along nálas; bán is found everywhere and is represented by some fine though young trees along the nalas: in the higher portions, however, it is much damaged by excessive lopping and most of the trees are reduced to mere pollards. Ayár forms a mere scrub and never attains first class dimensions, but there are a good many large burans Saplings, poles, and young trees are more numerous than I. and II class trees. The forest is excessively open along dhárs and south-westerly aspects, but is about half-stocked along nalas and on northerly slopes. The quality of the stock is very poor, this being especially the case with bán, which is excessively lopped. There is a covering of grass with a few indigofera, desmodium, barberry, brambles, &c.	Advance growth of bán, ayár, and burans is found all over the compartment except on small grassy blanks facing south-west. There are seedlings up to ten feet in height, occurring at favorable aspects in dense patches. Bán seedlings are, however, much damaged by grazing and are reduced to bushes, except where the ground is too steep for cattle to graze; there are also some recent seedlings here and there.	Trees may be sold for charcoal-making, but they should only be felled over well established advance growth. The lopping rules must be strictly enforced. A pillar is necessary between Nos. 6 and 7 at the point where the boundary takes a turn.
...	2	104	Occupies the rest of the block; precipices are usually absent, but the sides of nalas are steep, as also are some slopes facing west which are broken up by outcrops of rock. General aspect more or less northerly with modifications to the west, south-west, north-west, and north-east.	30° to 40° average 35°, in parts extending for 20 chains downwards from the Mussoorie road; below this and along nálas 40°	...	As in compartment 1 ...	Except a large grassy blank in the northern portion dotted with ban, ayár and burans and a smaller one, the site of abandoned cultivation in the southern part, or in all about 20 acres, the compartment is stocked with the above three species and a few kokat. Ayár and burans together are a little more numerous than the bán, predominating everywhere except just along the lower course of the nálas. Bán is excessively lopped, but on the whole the stock is somewhat better than that in compartment 1 Saplings, poles, and young trees predominate everywhere, I. and II. class trees not being numerous. The density is similar to that in compartment 1, being somewhat higher along nálas. Undergrowth as in compartment 1.	As in compartment 1.	Ditto
Baura ...	1	106	...	.	.	...	Only one compartment, *vide* description of blocks.		

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration or aspect.	Gradient	Altitude.	Rock and soil	Stock.	Reproduction.	Treatment.
Kota	1	174	...	...	...	...	Only one compartment, *vide* description of block.	...	
Bindla	1	96	...	...	...	...	Ditto ditto ...		
Kurwa	1	65	Occupies the basin of a nala which crosses the Chakráta road between pillars Nos. 6 and 7 Aspects northerly, north-westerly, and occasionally westerly.	25° to 40°	5,200′ to 6,700′.	The underlying rock consists of shales, fragments of which are mixed abundantly with the overlying loose sandy clay which is on an average about two feet deep	The slope on the right bank of the nála is a blank with next to no tree growth on it. The remainder is stocked with a very poor scrub of burán, ayár and ban, never rising above 20 feet in height and on an average being 10 or 12 feet high only.- They are excessively lopped for fodder and for use as manure, besides being browsed down by cattle. The ravines, however, are somewhat better stocked with kokát such as Cornus capitata, wild pear, &c. Grass covers the ground in open places and there are undershrubs such as barberry, Randia, Myrsine, &c, in ravines and in less numbers in the rest of the stocked area.	There are bán seedlings of different ages up to 3 feet in height which skirt the tree growth on northern slopes and are in places sufficiently numerous, but they are kept down by heavy grazing and can never shoot up. Bursna seedlings are more numerous and their condition is better as they are not eaten by cattle.	Owing to gross maltreatment by the villagers, this compartment, which was only opened by permission of the divisional officer, has now been closed, and it is proposed to coppice the little that remains of the original forest and to plant up the whole area within the next three years, using bán and the pines and trying Acacia decurrens over two acres as an experiment.
...	2	65	Comprises the upper part of the basin of a small stream which crosses the cart-road just above Kurwa village It is traversed by numerous small feeders of this stream, so that the aspect is very variable, although the prevailing ones are north westerly and south-westerly.	25° to 40°	5,800′ to 6,700′	The underlying rock is shale and the soil is a rich, slightly sandy loam naturally loose and friable and mixed up with fragments of shale; in places it becomes clayey, and is covered with a thin layer of humus.	That portion of the compartment from pillar No 16 to pillar No. 13 is a blank, extending about six chains down the ridge. The rest is well stocked with a mixed forest of bán, burána and ayár, consisting chiefly of saplings and poles with but few mature trees. These species never attain to any great height and the ban suffers much by the attacks of the larva of a longicorn beetle A few trees of Myrica sapida occur here and there The ground is immediately covered with grass, in the open, and bramble, barberry, small zingal, Myrsine, &c., elsewhere	Seedlings of the species mentioned under stock are to be found everywhere, and along the upper edge of the forest there is very good advance growth of bán in patches, the plants being from 1′ to 6′ high; burána and ayár seedlings are however usually the most numerous.	This portion is being treated as a coppice, *vide* para. 151 of the plan Two small chaks, Beithát I and II, have been demarcated. Various fitful attempts at planting have been made The portions coppiced should be carefully watched and blanks filled by dibbling in acorns where necessary.
Inári ...	1	132	Occupies the southerly slopes of a continuation of the Moila ridge and is situated to the right of Kanaksar nala. The higher portions are very precipitous the limestone rocks rising up perpendicularly above the grassy blanks, and similar precipices, forming sheer	30° to precipitous, average above 45°.	to 8,566	The limestone is very prominent and along the main ridge there is an outcrop of quartzites, whilst some minor beds of a crumbling shale are met with in the lower portions especially along minor ridges The sub-soil is a sandy clay and on it rests a shallow, dry and very free loam, but both kinds of soil are absent,	Nearly two thirds of the compartment is an open grassy blank dotted with a few mature bán near the nálas and with some lauri on the rocky precipices The stocked portion occupies the right side of the Kanakár nála extending about 15 chains up the slope It is principally covered with moru and bán with a small proportion of kohát, holly, Cornus macrophylla, and capitata, wild pear, also some burána and ayár There are a fair number of mature bán, moru and lauri Saplings, poles and young trees predominating near the nála. Some of the oaks are very fine,	Almost wholly absent from the higher portions and very poor along the nálas, only a few bán seedlings being seen here and there with some young moru near the parent trees in moist places.	To be kept as a grazing ground,

			walls of rock, occur in the west and along the nálas, the intervals being occupied by grassy blanks. The prevailing aspect is more or less southerly			from the precipitous parts.	being tall, straight, and with long clean boles There are also some good lauri but mainly in inaccessible places The stock is rather open near the upper limit of the forest, but is moderately dense along the nalas The soil is mainly covered with grass except along nálas and in the stocked portion where there is the usual brushwood of indigofera mixed with brambles bar bery Sarcococa, Prinsepia. The small ringal (a falcata) occurs along the nálas		
Ditto	2	106	Consists of the left basin of the Kanakár nala intersected by numerous small dhars The sides of the small water course are steep and the upper portion is broken by precipices. Main aspect. west and north west	Except along nálas and in the upper part 35°—45°, average 40°		The usual limestone interstratified with beds of a hard red shale outcropping along dhars A soft yellowish clay slate rests on the underlying rock in the northern portions. The sub-soil is a free clay fairly deep and on it rests a dark rich loam from 3′ to 1 deep A thin layer of humus occurs occasionally on the minor slopes and along nálas	The northern and eastern portions of the compartment are grassy blanks without any tree growth The remainder is stocked with a mixed forest of moru bán, kokat, ayar burans rai, deodár, and lauri. The oaks everywhere predominate constituting the greater part of the stock Along the nalas they are mixed with kokat such as bird cherry wild pear, holly, Cornus capitata and macrophylla, &c, and on exposed slopes with burans and ayár The highest and steep portions contain a small percentage of deodar saplings and poles, while the precipitous rocks are covered with a few lauri Rai predominates on a small area near the kanakár nala The forest is a sapling and pole one, but there are a considerable number of mature oaks and rai, many of the last being unsound	Recent seedlings of bán, rai, deodar, ayar and burans are wanting or rare, but advance growth of the above species represented by seedlings 2′ to 10′ high is found all over the stocked portions, and moru seedlings of all ages occur under the parent trees.	Some oak could be sold for charcoal making if any purchasers were forthcoming
"	3	114	Comprises that part of the right basin of the Remuwa nalá below the Bodiar block The middle portion contains sheer walls of limestone which is also much developed along the nala and in the higher portions and crops out here and there all over it. General aspect south, minor ones east, south east, and south west	Varies from 30° on the grassy blanks situated among the rocky precipes to 45° on the lower slopes and on the higher portions	..	Similar to compartment 2, except that clay slate is not found	The stock occupying the lower half of the compartment is composed almost wholly of bán, the proportion of other species, viz., deodar lauri, moru ayar burans, and kokát being very insignificant Of these deodár and lauri are found on rocky ground below pillars 2 to 9, ayár and burans only here and there, moru in shady ravines and kokat along the nala. The ban are of all ages and sizes, poles being the most numerous Some of the mature ban are fine trees, but the majority are crooked and unsound The forest is a pretty open one The upper half is an open grassy blank dotted with a few mature bán near the stocked area and on some precipices but without any tree growth higher up.	Almost entirely wanting in the upper half of the compartment, but represented by a few straw seedlings in the lower half especially along nálas	Ditto
"	4	80	Comprises the slopes on the left bank of the Remuwa nala below the Bodiar block The edges of the prominent dhár betwe n pillars 8 of Bodiar and 10 of the outer boundary are sharp, precipitous, and full of angular lime stone blocks in situ which also crop out in other places. General aspect north-westerly	30°—60°, average above 45°	.	The usual limestone and outcrops of a brittle shale along some of the minor dhara. The subsoil is clayey and the top soil is a rich free moist loam 6″ to 1 deep, where it exists A thin layer of rich humus is found along the Sun gad and in other nalas	A mixed forest of moru, ban, burans, ayar, and kokát, no grassy blanks of large extent occurring Mature and young trees bear a fair proportion to saplings and poles and the ban trees are tall, straight, clean boled, and vigorous A large percentage of the mature moru is, however unsound, though there are some very fine specimens in deep and moist nalas	Very poor and represented by a few established seedlings of bán, ayar and burans from 1 to 4 high. Moru seedings of every size are found near parent trees along nalas, but are rare elsewhere Recent seedlings are seldom found	Ditto.

Description of Compartments—(continued).

Name of block.	Number of compartment	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Inéri ...	5	70	Consists of that portion of the basin of the Bodiár nála included in forest limits below the Bodiár block The dhárs are usually sharp-edged with steep sides, the western one being especially rough, and bare limestone precipices are not uncommon Aspects on left bank south and south east, on right bank more or less westerly	Omitting precipices 30° —45°, average 45°.		As in the preceding compartment.	A mixed forest of moru, bán, burśns, ayár, kokát, rai and moru form the largest proportion of the stock predominating in the northern portion and in shady nálas. Rai with a few saplings and poles of deodár and kail is found near the Bodiar block, whilst, kokát grows in moist ravines. A fair percentage consists of mature trees of rai, moru, bár and burśns &c , which, though tall and straight, are frequently hollow and flat-crowned A small area along the dhár below pillar No. 8 of Bodiár and another high up on the slope to the left of the nala as well as a narrow slip of land along the boundary line from pillars 99 to 102 are open grassy blanks dotted with a few mature trees. There is also a very small blank near pillar No 7 of Bodiár.	On north-westerly and westerly aspects and in nálas self protected from fire there is a fair number of seedlings, of bán, moru and rai in every stage of growth from 1′ to 10 high, but yearlings, as a rule, are rare. Moru seedlings are found growing close together near mature trees, but have been injured by grazing.	Some oak could be sold for charcoal-making if any purchasers were forthcoming. An inspection path coming from compartments 2, 3, and 4 passes through the upper portion.
Bodiár ...	1	254	The upper part of the left bank of the Bodiar nála as far south as a prominent spur a few chains beyond pillar No. 4, which ends at the junction of the two nalas and then this tributary to its junction with the Bodiar nála. The compartment is divided into small catchment basins by a number of small dry water-courses and nálas, being rocky along main ridge and along some secondary spurs. Aspect varies from north to south, but the principal ones are north-west, west and south-west.	35°—45° in upper portion, average 40°, 30°—40° and in places as low as 10° in lower parts average 30°	to 9,170	The usual limestone overlaid in places by soft yellow clay slates belonging to the Mundáli series, which form the basis of the rather stiff yellow clay met with all over the compartment and which is more than three feet deep on the gentle slopes along the nálas. The top soil is a rich, free, dark loam about three inches deep on southerly and south-westerly aspects, but up to a foot in depth on westerly and northerly ones. Under the stocked portion there is a layer of half decomposed deodár and rai needles from 3″—6″ deep.	The southern and south-western slopes of the various dhars that succeed each other from one end of the compartment to the other are open grassy blanks dotted with a few mature deodár and moru and some saplings Grassy blanks of small extent are also found along the main spur from Lokandi peak to pillar No 3, but do not extend very far down, except along the left blank of a conspicuous secondary off-shoot of the spur. About a half of the total area is taken up by the above blank and the other half, occupying the western, north-western, and northern slopes, is stocked with a fine forest of deodár and fir saplings and poles With the exception of a small area just below the Lokandi peak where firs predominate the deodár everywhere outnumbers the other component species, though a small sprinkling of rai, moru, and kail is almost always present. Other species, such as lauri on some rocks near Lokandi peak, thinner below it, and bán, ayśr burśns and kokát in the lower portions and in nálas occur in inappreciable numbers. The number of mature deodár is very small, being less than $\frac{1}{15}$th the number of III, IV., and V. class trees, the proportion of old to young rai being about $\frac{1}{3}$th. The I and II class deodar are quite unfit for timber, being knotty, branched close to the ground, and sometimes hollow. Nearly all the good trees were felled by villagers	There are no seedlings on the small blanks along the main dhár and only a few on blanks facing more or less south In the fir forest below Lokandi peak there is very good advance growth of firs except in the nalas, but recent seedlings are absent. In the stocked portions the reproduction is fairly satisfactory, though scarce under dense cover The right slope of the dhár along the southern boundary is thickly covered with deodár seedlings of every age and size natural seedlings being mixed up with others which were planted. Ringál seedlings are coming up near the dead clumps.	Some dense patches of deodar saplings and poles might be thinned out to supply indents for such produce, but care should be taken to preserve the more healthy and vigorous stems and to maintain the leaf canopy sufficiently dense to enable them to be drawn up and acquire long clean boles.

						prior to the advent of the Forest Department and what remained were used to build the Chakráta barracks Mature firs are of good quality below Lokandi peak, but elsewhere they are unfit for timber. The deodár and other saplings and poles are splendid and in places are growing so close together as to require thinning, but in the lower portions the stock is somewhat thin.		
Bodiár ...	2	162	Occupies the rest of the slopes on the bank of the Bodiar rála south of compartment 1, and it is cut up by a number of dry watercourses The dhárs which possess more or less flat tops higher up become sharper near the main nala and end abruptlyin precipices. Aspects northerly and north westerly on right hand slopes, southerly and south-westerly on left hand ones.	30°—40°, average 35° in upper part; 35°—45° and over average 45° lower down.	...	As in the preceding compartment, except that the top soil is deeper and the bands of clay more developed along the main spur.	The open grassy blanks are numerous, including all southern and south-western slopes, but as the right flanks of spurs are broader in descending than the left ones the dhars converge and unite. The lower blanks are not so conspicuous as the upper ones are besides dotted with mature trees, saplings, and poles to a greater extent. The northern and north western slopes are well covered with a pole forest of deodár, and rai in the upper portions and with those trees and moru in the lower ones. A few bán and burúns occur in the lowest parts below pillar No 7, whilst in ravines are kokat such as horse-chestnut, wild pear, and Euonymus. There are a number of young kail in the open blanks and some morinda is found on the higher and moister slopes. The proportion of I and II class trees to the remainder is much the same as in compartment 1. Mature moru are however commoner and of better quality, and the quality of mature deodár and rai is also somewhat better on northerly slopes.	Advance growth on northerly and north westerly slopes in the lower portions is poor owing to the dense leaf canopy near compartment 1, on the flat tops of dhárs and generally on westerly aspects Good advance growth of deodár with some rai is met with. Recent and established seedlings of moru ar also common near the parent trees and so are also those of rai, though in a less degree. The open blanks on the lower slopes are also fairly covered with advance growth of deodár	Same as compartment 1.
	3	201	Consists of the right half of the basin of the Bodiár nala The lowest parts are precipitous and precipices also occur along the main ridge. The other minor ridges do not possess very steep gradients. A number of shallow and dry watercourses divide it into slopes facing east, south-east, south, south-west, and west	In highest and lowest parts 35°— 45°, average 40°; elsewhere 35°; along the lower course of nalas 15°—30°.	...	As in compartments 1 and 2. There is very little humus.	Only a very small portion is stocked, by far the greatest part being grassy blanks dotted with saplings and poles of deodár and kail with one or two moru here and there at great intervals on the higher slopes and a few mature bán in the lowest portion The stocked areas are confined to the sides of nálas with more or less westerly aspects as far as deodár and rai are concerned, and to a deep nála below Kandua tiba with sides looking to the south-east where moru predominates Between this nála and pillar No 8 the open blank is dotted with a few old bán. Nearly four fifths of the stock is composed of saplings and poles with a sprinkling of I and II class trees, most of the mature moru being found in the nála mentioned above, but they are mostly unsound. The mature deodar and rai are of the same inferior quality as in compartments 1 and 2, whilst the saplings and poles are very good.	There is good advance growth of deodár in the vicinity of mature trees, but it is rare under dense forest and almost wanting in the grassy blanks and along nálas. There are a few established rai seedlings here and there, and moru seedlings of all ages and sizes exist near the parent trees In some places natural and raised seedlings are mixed together in a confusing manner.	The grassy slopes covering about 33 acres in the lower part, between pillars 7 and 8, should be planted up with kail and deodar in 1904 and 1905, and all failures in the old plantations should be replanted These old plantations cover the greater portion of the compartment, and kail should be sown or planted where the deodár are too far apart.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Bodiár ...	4	210	Occupies the basin of the Remana nála. Bare precipitous rocks crop out along the main ridge, along the western boundary and in the lowest parts The middle area has a low-lying position, being bounded on the south by a high ridge running east and west. The aspects are in consequence very variable, north-west, westerly, south-west, southerly and south-easterly prevailing.	Excepting the precipitous parts 30°—45°, average 35°.	...	As in the preceding compartments. The soil is wanting on precipitous rocks and is mixed profusely with fragments of limestone in the highest portions The depth of soil varies from 6" to 2' but in the low-lying middle portion it exceeds 3' in places.	The southerly and south-easterly slopes of dhárs are grassy blanks along the tops of the spurs and only dotted with trees along nálas, but the westerly, south-westerly, and north-westerly slopes are covered with trees, as are also the beds of nálas. The lower one-third of the compartment, with southerly, south-easterly, and south-westerly aspects, is stocked with fine kan and moru and a few mature deodár The other two-thirds has a mixed growth of deodár, rai, and moru. The stock consists of saplings and poles with mature trees either in the moist ravines with north-westerly slopes or on precipices. The young trees are very fine and are growing close together, but mature trees in the middle and lower portions are much branched, hollow and knotty, although there are some splendid bán along the nálas In the higher portion there are some very fine and tall mature deodár and rai with clean boles.	There are a fair number of deodar and rai seedlings in the stocked portions, but they are unevenly distributed and absent in some damp places. The blanks near the forest are being filled up by seedlings, small areas facing west, south-west and north-west- containing dense advance growth of deodar 3' to 15' high Most of the grassy blanks, however, have natural seedlings only near the few parent trees of deodár or moru; recent seedlings are rare.	All empty pits in the old plantations to be refilled with deodár transplants and kail planted between. The grassy slopes which have not yet been touched, and aggregate about 25 acres, should be planted up in 1903. Thinnings to be made amongst the young deodár as in Bodiár 1 and 2.
	5	231	Comprises the entire right half of the basin of the Thown Ganwa. Several minor spurs from the main ridge with dry water-courses between, cut it up into small basins, and in the lower part there is a high ridge running east and west, being a continuation of that in compartment 4, so that the central portion lies in a hollow. In places in the lowest part as well as along the main ridge and along some minor spurs there are rugged and sharp precipices, whilst the southerly slopes of dhars are strewn with limestone blocks. As-	Usually over 45° along the main ridge in the lowest portion and on the dhars; elsewhere 30°—45°, average 35°, but in the hollow often as low as 25°	...	As in the preceding compartment.	The middle portion, which was formerly under cultivation, is a grassy blank with a few scattered deodár and kail seedlings and a few moru trees; elsewhere there is usually a sapling and pole forest, deodár predominating on westerly and south-westerly slopes and rai on northerly, and north-westerly ones. Mature deodar are few in number, and these few are either situated on rocky portions in the lower part or are scattered among the saplings, poles, and young trees. Mature rai are more numerous and are generally found in nálas and in the higher parts. Moru occurs everywhere, bán, burásu, and aiár on the lowest portions on southerly and south-easterly slopes, kauri on the precipitous rocks along the main ridge, and the usual kokat of holly, Cornus, Euonymus, &c., in the ravines. On favorable aspects the forest is fairly dense, and in some patches of deodár the canopy is complete, whilst in a few others thinnings are required. In the lowest part, owing to its rocky nature, the forest is an open one. In nálas and on north-westerly slopes in the upper part there are some fine mature rai well fit for timber. The large deodár	A very good advance growth, of deodar, pure or mixed with kail, or rai, is found in patches on westerly and south-westerly aspects near the main ridge and on dhárs where the leaf canopy is open. In the well-stocked areas established seedlings of deodár and rai are rare, and there are even fewer recent ones. There are very few natural seedlings in the open grassy blanks. The lowest part also contains some established young deodar and rai, but moru seedlings are the commonest. Deodár seedlings are usually met with on rocky ground and where there is but little grass.	Old plantations to be treated as in the preceding compartments and the remaining bare slopes, about 46 acres to be planted up in 1901 and 1902. Thinnings can be made in some patches of young deodár.

		pects very variable, but the predominant are southerly south-west erly, and westerly.				are as usual knotty, much branched and worthless for timber, whilst the moru is usually unsound. The young trees are of excellent quality		
...	6	110 Comprises the lower part of the basin of the Thowa Ganwa south of the tributary which rises near pillar No 15 and flows eastward The principal aspects are north-east, east, and south-east, the last two predominating. The lower portions contain bare rocks rising vertically over the grassy slopes at their base, and the dhárs are sharp-edged, and rugged ground is more seen in the upper portion.	In lower part as a rule above 45°; in upper part 30°—45°; average 35.°	...	The usual limestone interstratified along the boundary of the Inári block, with beds of metamorphosed and somewhat ferruginous shales The soil resembles that of the other compartments	The greater portion, including the whole of the lower southern half, is an open grassy blank dotted with mature trees of moru and ban, and with a few saplings and poles of kail The only stocked portions are the north-easterly slopes of minor dhárs in the northern half of the compartment, which contain a mixed growth of rai, deodar and moru, the first predominating everywhere constituting near a half of the entire stock Deodar, is represented chiefly by saplings and poles, mature trees being very few, and these stunted, much branched, and full of knots Mature rai, moru, and bán are more numerous and some of the rai are very fine, whilst the moru are usually unsound. There are a few kokát along nalas, and in places a few lauri, bursna, and ayár The forest is rather more than half stocked.	Established deodár and rai seedlings 3'—12' high, the former being the most numerous, are scattered throughout the stocked areas and the blanks which immediately adjoin them. Moru seedlings, full sizes, up to five feet or more in height, are found in dense masses near the parent trees, and a few kail seedlings occupy the higher blanks. There are only a few individual bán seedlings coming up here and there. The reproduction in the southern part is almost nil.	The grassy slopes covering about 54 acres should be planted up in the years 1899 and 1900.
...	7	295 The upper part of the right basin of the Thowa Ganwa north of compartment 6. Precipitous rocks crop out along the Moila spur and some of the minor spurs A number of conspicious secondary spurs sloping gently as they approach the two nalas on the east and south divide it into slopes facing mainly the south, south-east, and south-west.	In upper parts 35°—45° and over; in lower parts 25°—35°, average 30°.	To 9,058'	The underlying rock is the usual limestone and is pierced by veins of quartzite along the Moila spur. A few beds of a hard shale occur at the eastern side, but soft clay slates resting on the limestone are found all over the lower portions. The gently sloping dhárs are covered with a very deep and free clay which in its turn is again covered with a deep layer of loam. On the stocked areas there is a layer of half decomposed needles of rai and deodár from 3 to 6 inches deep	With the exception of very small areas situated along the main ridge the whole compartment is an open grassy blank dotted with a very small number of saplings and poles and in places with a few mature trees of deodár, kail and moru standing far apart from each other and occupying generally the beds of nalas or congregating in groups of from 10 to 40 in sheltered situations. Of the stocked areas a few acres are situated in the western extremity below pillar 16 on a slope facing the north and north-east, and contain a mixed growth of rai and moru of all classes A small nala between pillars 19 and 20 contains some deodár and moru poles, whilst three other minor slopes separated from each other by open grassy blanks between pillars 21 and 25 are stocked chiefly with deodar and rai of all ages. The mature deodár and rai are knotty and much branched, but the young trees are vigorous and well grown Lauri are found on precipices between pillars 21 and 23 A dense growth of grass covers the blanks, and there is under the forest an undergrowth of desmodium, indigofera, sarcococca, brambles, willow &c., Dead ringed are also met with	A fair number of deodár, rai, and moru seedlings 1' to 10' high occupy small blanks in most of the stocked portion, whilst young deodár seedlings are also found near isolated trees and kail seedlings scattered over the grassy blanks In the lower portions reproduction is very backward. Recent seedlings are absent.	Over 200 acres of grassy slopes should be planted up with kail and deodár from 1889 to 1898, cypress being used in the rockier places.

Description of Compartments—(continued).

Name of block	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock	Reproduction.	Treatment.
Moila ...	1	165	Occupies the most westerly portion of the Moila block from the ridge running down from pillar No 19 of the Bodiár block. A succession of minor spurs with dry nalas traverse the compartment, and there is a sheer wall of limestone below the main ridge. Prevailing aspects north, north east, and north-west.	Omitting precipices 30°—45°, but usually about 45°.	to 8,566′	The usual limestone much developed in the higher parts and along ridges. The sub-soil is a sandy clay in places more than three feet deep, but wanting on rocks. The top-soil is a free, dark, rich loam fairly deep in stocked areas, but shallow in the lower portions, and it is covered under forest with about from 3″—6″ of humus.	The forest is very open on southerly aspects, but fairly dense in ravines. The portions along the outer boundary occupying one fourth of the whole area are open grassy blanks dotted with a few moru and bán on north-western aspects and devoid of tree-growth elsewhere. The remainder is stocked with rai, deodar, lauri, and moru in the higher parts, moru, bán, burúns, ayár, and kokát in the lower. Rai predominates in the upper half, bán and moru along the grassy blanks. Lauri mixed with deodár is met with along the main ridge and predominates on the very precipitous portions. Kokát, which is found in moist places, consists of holly, wild pear, laurels, Euonymus, Cornus capitata, and macrophylla, &c. Undergrowth of grass Desmodium, Indigofera, barberry in lower open places, and higher up of brambles, roses, honey-suckles, &c., as well as ringáls.	There are a sufficient number of seedlings from 2′ to 12′ high of deodár, rai moru, bán, lauri, and kail all over the compartment, except in nálas and under dense cover, but recent seedlings are erar.	Trees for free grantees need only be marked.
"	2	125	Situated to the north of compartment 1, consisting of slopes as far north as a line between Bodiár pillar No. 21 and outer pillar No. 16, the line following a very inconspicuous dhár for half its length, but on its upper half skirting a steep precipice. The principal dhár is very rugged, with often a sheer wall of rock projecting over the slopes below, and there is a similar precipice branching off at pillar No. 21, which first goes west and eventually south, dividing the compartment into two. The portion below it slopes gently down-	Excluding precipices between the rocky walls from 35°—45°, in lower half 20° to 30°	...	As in the preceding compartment.	Similar to that in compartment 1, consisting of a mixture of rai, deodár, lauri and kail in the upper half, of bán, moru, and kokát in the lower portions. Lauri occupies the precipitous rocks and is mixed with deodar and a few rai, the last two species being generally predominant on the slopes, between the two rocky walls. The lower half is poorly stocked with bán and kokát scrub interspersed with numerous small grassy blanks. The lower slopes of dhárs are grassy blanks with no tree-growth on them or at least only a few excessively lopped mere pollards of bán. Nowhere is the forest very dense, and the quality of the trees is as a rule inferior.	There are a few straggling seedlings of bán and kokat with somwhat more numerous established seedlings 3′ to 10′ high of deodár, rai, and lauri generally on northerly and north-westerly slopes.	Ditto.

		wards and contains a number of flat dhárs Prevailing aspect more or less westerly.						
3	178	Situated to the north of compartment 2, as far as a conspicuous precipice south of Bodlar pillar No. 22 The upper portion is exceedingly rough and steep, being enclosed by enormous walls of limestone rock on three sides. The lower portions are free from precipices, but are divided by a number of gently sloping in conspicuous dhárs. The predominating aspects are north and north-west.	In higher parts 35°—45° Open grassy blanks 20° near boundary to 35° higher up.	...	As in preceding compartment.	More than half the area along the outer boundary extending half way up the compartment on more or less westerly slopes is an open grassy blank, dotted with individual trees of bán, kokát, and a few moru The adjoining slopes with north westerly and westerly aspects and the beds of nálas are stocked with bán, moru, rai, and a few kail. The higher portions are covered with lauri and deodar on the precipices and with rai, deodár, and kail, at their foot. A sprinkling of kail and moru, however, is found all over the compartment, except on open blanks in the south. There is a good proportion of mature trees of all species, but those of deodár and rai, owing to the rocky nature of the ground, are much branched and knotty. The forest adjoining the blanks is usually very open, becoming denser in the higher parts.	A good advance growth of deodar, with some established seedlings of rai, morinda, and lauri is found in the higher parts, the seedlings being 3 to 15 feet high and in places growing close together. In the lower portions too there are seedlings of all ages of bán, moru, and kail, but their numbers are insufficient.	Trees for free grantees need only marked.
4	105	Situated just below the Moila peak and consists of the slopes below the dhár running from that peak to pillar No. 21 of the outer boundary and compartment 3 Along the Moila ridge the ground is very steep or precipitous, whilst minor precipices also occur along the smaller dhárs and nálas throughout. Main aspect westerly, but slopes below pillar 21 face south and south-west, whilst the right flanks of minor dhárs face north-west and north.	Near outer boundary 35°—45°, average 40°; in upper portions 40°—60°; average over 45°.	to 9,058'	As in preceding compartments. Clay slates are found along the upper part of the Gazat-ki-dhár and form the basis of the clay which crops out at this place.	The lower portion along the boundary line and the beds of water-courses are grassy blanks, whilst the rocks along the main ridge and on the minor dhárs contain lauri and deodar By far the greater portion of the compartment is stocked with rai and morinda, the latter occurring in small numbers in the highest portion and on northern aspects. A few deodár and kail are also found in the lower part along ridges Generally at the lower extremity of the stocked area saplings and poles are more numerous than mature trees, but on northerly and north-westerly aspects and in ravines in the upper portions there are many very fine mature rai, tall, free of knots, and with long clean boles. Large deodár are knotty and much branched, whilst most of the lauri grows on inaccessible precipices The forest is considerably denser than in the preceding compartment, and is almost always more than half stocked.	Advance growth of rai mixed with some kail, deodár, and lauri, the seedlings being from 3' to 15' high, is found more or less in patches along the boundaries of the compartment on westerly aspects. In the ravines and on northerly slopes there are a few scattered seedlings. Recent seedlings of the component species, especially of deodár, kail, and lauri, are also found here and there, but their number is small.	Ditto.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartments	Area in acres.	Configuration and aspect.	Gradient.	Attitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Moila ...	5	165	Occupies the highest portion of the block east of pillar 21 from the Simla road to the main ridge. The top of this ridge is nearly flat or possesses very gentle slopes, but a few chains below a number of very steep and rugged dhárs branch off from it with steep-sided nálas dividing it into short slopes facing north-west, north and north-east, the whole compartment looking north	Top of main ridge 10°—25°; elsewhere omitting precipices, 30°—45°; average 40°.	to 9,058′	The usual limestone covered with a sandy clay belonging to the Mundáli series which is especially developed along the main ridge where it is often more than three feet deep and generally has a rich, dark, free loam resting on it. Except in the highest portions this top soil is covered with a layer of half-decomposed needles 3″ to 9″ thick.	The flat main ridge, the beds of nálas and small areas along the two dhárs on the extreme east and west are grassy blanks devoid of trees. The rest of the compartment is covered with a mixed growth of deodár, firs, and kail, and in places with individuals of lauri, moru, yew, and kokát. Rai predominates everywhere, being mixed with a few morinda in the upper part and in the lower two-thirds with some deodár and kail, which are commonest on north-westerly and north-easterly slopes. The ravines are almost wholly stocked with rai, whilst lauri occupies inaccessible places along the dhárs. A small area in the west above the Simla road is an open grassy blank dotted with lauri, kail, and deodár In the lower parts tall and healthy saplings, poles, and young trees predominate, mature trees being confined to ravines, but many I and II class much-branched deodár occur just above the road. Higher up there is a fair proportion of mature rai, and although a large number are unsound, many of them are tall, free from knots and possess clean boles. The undergrowth consists of grass in the open, and of ferns, sarcococca, skimmia, strobilanthes, brambles, &c., under cover. Ringál occurs in the higher parts in ravines.	Poor in the higher parts, consisting of groups of from 10 to 30 established seedlings of morinda and rai 3 to 10 feet high, scattered at great intervals and totally absent in several places. In the lower parts and along the northern boundary rai seedlings become more numerous Advance growth of deodár is also found, and on north-westerly and north-easterly slopes there are numerous kail 5′—15′ high, mixed with smaller deodár seedlings. Recent seedlings which are absent in the higher parts are of frequent occurrence lower down along the dhárs, but there are usually no seedlings along the nálas.	Trees for free grantees need only be marked.
	6	80	Occupies the slopes east of compartment 5 from the Gazrát dhár to the Simla road. This dhár is full of sharp rocks and the compartment is traversed by several minor dhárs with sharp edges and nálas with precipitous sides The bare rock also crops out here and there elsewhere. Main aspect northerly.	Along the dhárs usually over 45°. In nálas and in lower parts 30°—45°; average 35°.	...	The usual limestone, but on and near crests and in places along the main dhár, a soft bluish shale crops out to the surface The sub-soil is a sandy clay wanting in places along dhárs, &c, but fairly deep in ravines mixed with fragments of the underlying rocks. The top soil is a free, dark, loam absent from dhárs, shallow in other places and covered under stock with a thin layer of humus.	With the exception of small grassy blanks along parts of the outer boundary the area is stocked principally with saplings, poles, and young trees of deodár, kail, rai, morinda, lauri, moru and, bán. Rai predominates and occurs everywhere but is more numerous in the east, mature trees congregating in ravines. Deodár and lauri exist on dhárs and rocky ground, bán in the west, and moru and kail throughout the compartment; I and II class trees constitute but a small percentage of the stock, and are knotty, stunted, and much branched The forest is deteriorating and III class trees dying out in the western extremity, where green trees are much hacked by villagers for "jogan" The forest is very open in the west and on slopes facing the east and north-east, but is denser on northern and north-westerly aspects and in ravines. Undergrowth as in compartment 5.	Advance growth of lauri and rai and a few established deodár seedlings exist along the dhárs, and patches of moru seedlings occur near the parent trees In the lower portions advance growth of kail exists on north-westerly slopes, and there are also a few young bán The reproduction is much damaged by grazing, many seedlings being kept down as mere bushes.	Ditto The practice of hacking green trees for "jogan" must be stopped.

	7	85	Situated below compartment 6, occupying the basin of a tributary of the Ghawáh nála. A succession of dhárs and water-courses converging towards the north cut it up into slopes facing north-east, north, and north-west, the general aspect being north.	Along the Simla road 30°—60°—average 45°; lower down above pillar 1 and in nálas 30°—40°; average 35°.	...	As in the preceding compartment, the limestone rocks being very prominent.	Rather over half the area, viz., the western portion and the lower slope of the dhár which separates it from compartment 8 is an open grassy blank dotted with mature trees of bán and a few moru with saplings and poles of kail. Adjoining the blanks occupying the nálas and slopes, with northerly and north-westerly aspects, there is a stock of bán, moru, kail, and a few rai, whilst just below the Simla road rai predominates mixed with moru and kail. Mature bán are few and far apart, whilst those of rai and moru are, as a rule, found in the nálas in the upper part; they are only fit for fuel. Lauri occupies the rocks, and there is the usual kokát in ravines. The forest is only pretty dense in the higher parts.	Rai seedlings 3′—10′ high are found here and there; moru seedlings of all sizes and in sufficient numbers exist near the parent trees, whilst there is a very good but patchy advance growth of kail throughout, the seedlings being from 2′ to 12′ high. The advance growth of bán near nálas is much damaged by grazing. There is not a sufficient number of recent seedlings.	Ditto.
Mála ...	8	145	Situated below the Simla road east of compartment 7 and bounded on the east by a nála from pillar 3 and then a ridge running up to the road from the junction of this nála with a second. It is broken up by very rugged precipices of limestone. Prevailing aspects northerly, north-easterly, and north-westerly.	In the upper part 35°—60°, average 45°; in lower parts 25°—40°, average 35°.	...	The usual limestone predominates though beds of soft, crumbling, and bluish shales crop out in places along the northern boundary. The sub-soil where it exists is a sandy clay shallow in the upper and fairly deep in the lower parts. The top-soil is a dark, free loam, moist and fairly deep in the higher portions and in ravines, but shallow and sometimes wanting in the lower parts and in blanks.	The upper half is stocked with rai mixed in variable proportions with deodár, kail and moru, while in the lower half bán oak predominates everywhere, but is mixed with a large percentage of kail chiefly saplings and poles. The proportion of mature trees to the younger classes is not large and even I. and II. class bán are rare except in the blanks. There are a few lauri on the precipices, and in the lower course of the nálas there is the usual kokát growth of laurels Cornus macrophylla and capitata, poplar, meliosma. The lower western part near compartment 7 is an open grassy blank dotted with bán and kail. There are a few fine rai in the highest portions on northerly and north-westerly slopes where the forest is the densest, being on the contrary very open on north-easterly ones.	Patches of rai, deodár and kail seedlings of all sizes occur in the higher portion, whilst in the lower half there is a good advance growth of kail and bán, the plants being more or less uniformly distributed and the kail in a thriving condition, whilst the bán are damaged by grazing. Recent deodár, bán and kail seedlings are also common, but rai are rare.	Reproduction of kail and deodar should be watched, and if necessary certain areas should be included in scheme for cleaning amongst young kail.
	9	155	Consists of slopes below the road east of compartment 8 as far as the watershed line of the Mashak gád. Steep near the road, rugged, rocky and precipitous close to outer boundary, but elsewhere there are gently sloping dhars with flat tops, the slopes becoming continuous. Aspect more or less northerly, lowest part westerly.	In higher parts and along same dhárs 30°—45°, average 40°; elsewhere 30°, but sometimes only 15°—20°.	...	As in the preceding compartment.	Kail, chiefly saplings, poles, and young trees predominates, except in small areas along the western boundary, containing rai in the higher, bán in lower parts. In the lower part there are only kail and bán with a few moru and the usual kokát in nálas. The lowest portion of all is an open blank dotted with a few kail and bán. Mature trees form a small percentage of the stock, deodár, kail, and moru occurring in ravines, and on slopes with cool aspects, scattered bán in the lowest portions. Some mature rai and moru in the higher parts of ravines are tall, straight, and clean-boled, but deodár and kail are much branched, the bases of the latter having also been injured by fires. Saplings and poles are, however, very fine.	Splendid throughout for kail seedlings of all sizes up to 15′ with annual shoots up to 3′ mixed with bán which are damaged by grazing in lower parts, and in the highest parts where reproduction is less satisfactory, with a few young moru and rai on northerly slopes and with deodár of all ages on north-westerly, westerly, and north-easterly slopes.	Ditto. The few fields in the north-eastern corner called Surána and which are being cornered with natural reproduction are unassessed, and should not again be allowed to be broken up by the villagers of Rajauu.

APPENDIX O.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Missan ...	1	190	Consists of the precipitous rocky ground above the Simla road from pillar 27 northwards, and that portion of the block below the road north of the dhár which runs to pillar No. 17. This is also precipitous in some places as between pillars 19 and 12 and from pillars No. 8 to the road. Chief aspects east, south-east, and north-east.	30° to 45°, average 40°, but frequently higher and precipitous above the road.	7,200′—9,000′ average 8,000′.	The dark, massive, crystalline limestone often outcrops especially above the road, and in places it contains beds of a hard shale which become more frequent in the lower parts. Here and there a clayey slate overlies the limestone. The sub-soil is clayey as a rule especially in the open grassy blanks, and is mixed with fragments of limestone. It is covered in ravines and on northern aspects by a very deep layer of dark, rich loam and in other stocked portions by a similar, but much more superficial soil Humus from ½ to ¾ a foot deep is found under the forest.	Deodar (chiefly saplings and poles) forms the greater portion of the stock. In the upper portions it is associated with young rai and in the lower half of the compartment on south and east aspects with kail, which however extends, though in less numbers, to the highest peaks. A few lauri of all ages are found growing on the bare, precipitous rocks, both above and below the road. The other component species, *viz.*, morinda, moru, and kokát, are rare On the whole the forest is an open one and very irregular as to density, numerous open grassy blanks being interspersed all over the compartment, but are most frequent on south, south-east and east aspects. Mature trees of deodár and kail are found in the lower parts and those of rai occupy the ravines and northern slopes. Most of the dhárs are dotted with mature trees, which are knotty, branched from near the base and frequently unsound. Those in ravines, however, are of a better quality, and most of the saplings and poles which have not suffered so much from the fires of the past are healthy and sound. The undergrowth consists of grass and ferns on south and south-east slopes and of the usual brushwood in ravines.	Very good though patchy. The advance growth of kail and deodár, and in the upper parts sometimes of rai also, is splendid, some of the annual shoots of kail being over two feet long, whilst the density of the patches is complete Recent seedlings of deodár and kail, but particularly of the latter, are coming up in many places and do not seem to have been much injured by grazing. There are fewer seedlings in ravines. There are also but few seedlings in the blanks below pillar 25 and on the right of the dhar between the road and pillar 8.	The compartment is traversed by the Simla road. Improvement fellings to be made after Missan 2. A chak has been formed for the fields at Daboka. Two fuel paths will be required, one above and the other below the Simla road, about a mile in length altogether.
	2	277	Occupies the entire basin within forest limits below the Simla road of a nála which passes below Mashak village joining the Mashak gád opposite it. The upper portion contains several bare, precipitous rocks, and the whole is cut up by a number of deep narrow ravines with steep sides in their upper course and sharp-edge ridges between them. Prevailing aspects north, north-west, and west, but north of	30° to 45°, average 40° in the upper western portion, 35° along the outer boundary and along ravines.	6,800′—9,000′, average 8,000′	Yellow and blue clay slates are abundant in the lower parts and quartzose rocks are sometimes mixed with them. Lime stone is the chief rock in the upper parts. The sub-soil is a sandy clay fairly deep in the lower portions, shallow or absent on the higher rocky ground. This is covered by a rich, dark loam from a half to one foot deep on the gentler slopes of the Khokti dhár and in ravines. From ½ to ¾ a foot of humus exists everywhere except on open grassy slopes and in the western parts.	Deodár predominates throughout and is mixed with firs in the upper and with firs and kail in the lower parts, though the latter is found even on the highest points. A large proportion of the stock consists of mature trees of the three chief species, *viz.*, deodár, kail and rai, whilst saplings and poles are as a rule evenly distributed. Lauri, as usual, occupies the bare precipitous limestone rocks. Mature trees of rai and deodár are more abundant in ravines, whilst those of kail occupy slopes facing the north-east. Slopes with easterly and south-easterly aspects are only dotted with trees of deodár, kail, and lauri. Kail predominates in the western portion near Mashak The beds of the nálas are void of trees owing to the action of the winter snows. On the whole the compartment is fairly well stocked, but the forest is very open, or there are only	Very similar to the preceding compartment, but recent seedlings are less numerous and are wanting in the upper portions on northern slopes and in the nálas.	The Simla road skirts the upper part of this compartment; there is also a foot-path from Mashak to Kinani láni and another from pillar No. 23 to pillar No 28 of Bodiár. Improvement fellings to take place after those in Missan 3. The length of fuel paths required will be nearly two miles. The outer boundary has been rectified by the removal of pillar 26 from a field to the edge

		pillar 27 the aspects are north-east, south-east, and south				cattered trees on east and south-east aspects The mature trees, though tall and usually sound, are very knotty and branched from near the base, but the saplings and poles are very promising.		of the forest The assessed fields have been formed into two chaks, Nawain and Jawa. No fresh cultivation should be permitted.
3	220	Occupies the whole of the left basin of the Maráuwa gád and a portion of the right basin as well, as far as the first large tributary. Above the Simla road are perpendicular cliffs of limestone, whilst the slopes on the left of the gád are also precipitous. The principal aspects are northerly, south-easterly, and westerly.	35° to 45°; moderate slopes most common in the east.	6,800′—9,200′; average 8,000′.	As in the preceding compartment, except that a soft, bluish shale is found interstratified with the limestone in the vicinity of Lokandi lani.	Similarly constituted to the above Saplings and poles form nearly two-thirds of the stock, mature trees being commonest in the lower portions above the Simla road Lanri with deodar occurs on the limestone precipices below where there are open grassy blanks on easterly and firs and deodar on northerly aspects. Below the road the proportion of deodar and fir is almost equal, but rai saplings and poles predominate on northern slopes in ravines and near Lokandi lani, whilst deodár predominates on westerly slopes to the right of the gád. Here, however, the forest becomes very open, in fact the greater portion is a grassy blank, dotted with a few mature trees; similar blanks also occurring below the Simla road west of the gád. Deodar also predominates on slopes facing the north-west and north-east, and at the lower altitudes kail is scattered throughout, being most common in the lowest parts, whilst individual trees of moru, bán, ayar and burans occur here and there to the right of the gád and some kokat fringe the nálas. The forest is very open in the upper parts, but becomes denser lower down, and on the whole is about half stocked. In the upper parts the mature deodár are knotty and much branched, but lower down they are tall with clean boles and fit for timber. It is the same with the rai, but most of the kail are knotty and unsound. The young trees are of better quality.	Deodár reproduction exists throughout, but is not so abundant as in the preceding compartments. In the upper portions it is patchy, though some seedlings are to be found everywhere mixed with rai except in ravines On the western slopes to the right of the gád the young deodár are kept down as bushes by the excessive grazing which goes on here In the lower parts where mature trees abound the reproduction of all species is indifferent, and recent seedlings are very rare.	The Simla, the Bodiár, and the Kanasar roads, traverse the highest portions, and a foot-path from Lokandi-láni to Mashak down the gad is also used. Improvement fellings to take place after those in Missau 4 A portion of the Jawa chak is in this compartment About two miles of export paths will be required.
4	180	Consists of the remainder of the basin of the Mar uwa gád and of the right bank of the Minau nála up to the Kanasar road. It is traversed by the Aini-ki dhar The ground is rugged and precipitous on southern slopes and along the Maráuwa and Minau gáds near Mashak gád, but elsewhere the slopes are pretty even Predominating aspects north-west on the right, south-west on the left flanks of the numerous spurs.	25°—45°, sometimes only 20° in the centre, average 35°.	..	Chiefly limestone interstratified in the upper part of the compartment as seen along the Kanasar road with dark blue or ochreaceous shales, the latter overlying the limestone and being very friable or light and porous Quartzose rock also occurs in the lowest parts The sub-soil is a fine clay more than a foot deep and mixed with fragments of underlying rock It is covered by a free rich loam very shallow on southerly slopes, but a foot deep on northerly ones near nálas Humus is only found on the stocked northern slopes	Not so well stocked as the preceding compartments Slopes with southerly and south-westerly aspects are open grassy blanks except near nalas, where there are usually some scattered mature trees of deodar, kail, and bán. The forest is also very open in the lower parts containing large trees of kail, deodar, and bán. The northern and north western slopes just below the Kanasar road are, however, well stocked with rai and a little sprinkling of kail and deodar Mature rai occupy chiefly ravines and northern slopes, saplings, and poles being found along dhárs and at north-westerly aspects The middle portion of the Aini ki-dhar contains a dense growth of kail saplings with mature trees of deodar and bán at intervals. The forest is chiefly one of saplings and poles which constitutes ½ of the whole stock, deodár forming about ¼ of the crop. On southern slopes the trees are generally knotty and much	Very good seedlings of all ages are found throughout, except on southern slopes just below the Kanasar road. On the Ainidhár the advance growth of kail deodar and bán is almost impenetrable, the first species sending up annua shoots 3 feet long and over; it however decreases in density near the Patwa-khera owing to the cultivators trying to keep it down by fires In the upper portion of the compartment advanced growth of rai is found in patches, but there are scarcely any seedlings in the ravines.	The Missau road runs along the eastern boundary and a foot-path from Mashak to the Patwa and Asnári kherse passes through its middle, whilst a second foot-path goes from Lokandi-láni to Patwa-khera. Improvement fellings to take place after those in Missau 5. The fellings of deodár and kail being restricted to the Minau khad above Mashak, whilst most of the firs will come from the northern slopes below the

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartments.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
							branched, but they are tall and possess clean boles in ravines and on northern aspects. The young trees are of a better quality than the mature ones.		Kanâsar road. About a mile and a half of fuel paths will have to be made. Gujars' buffaloes should never be admitted as was the case in 1886, since they do much damage to advance growth of deodár and kail. Cleanings amongst the young kail should be made in 1889 and repeated at intervals of five years, if possible, or at least not longer than ten. A chak of cultivation called Patwa has been marked off.
Missau ..	5	300	Contains the right bank of the Missau gád and all the land directly draining into the Mashak gád northward to the Siári gád. The ground along the Missau gád below the Matuli dhár is very precipitous, the rocks in places forming walls denuded of all vegetable growth All aspects are well represented, the principal being south and south-west along the Minan, north, north-east, and north-west along the Mashak gád.	25°—60°, average 40°; gentle slopes along the Matuli dhár.	...	The prevailing rock is limestone, in places becoming conglomeratic and interstratified with shaly beds. The sub-soil is generally a sandy clay attaining a depth of more than three feet along the flattened tops of ridges. In the lower parts the soil is a loose, sandy loam mixed with fragments of the underlying rock and covered with about half a foot of humus.	There are three fairly distinct zones of vegetation, bán in lower parts, then kail and finally deodár from a few chains below pillar No. 50 to the Missau road. Some kail and deodár are, however, mixed with the bán in the lower parts, and the latter species is not totally absent from any portions. It is much lopped for fodder The forest is pretty dense in the kail belt, but elsewhere it is open and not quite half stocked. The undergrowth consists of grass in the open parts, ferns, barberry, sarcococca, and prinsepia in the stocked area.	The top of the Matuli dhár between the Matuli and Asmári kheras is completely stocked with splendid advance growth of kail and deodár, the young saplings being from 3 to 15 feet high, the kail producing annual shots often three long. Elsewhere seedlings of all the species forming the stock are well represented, but are not thriving except on steep ground or in moist places where they have escaped fires and excessive grazing. There are scarcely any in the blank south of the Matuli khera.	There are several foot-tracts from Mashak traversing the compartment, and it is bounded on the east by the Missau road. Nearly the whole has hitherto been open to fires and it has been protected for the first time this year Improvement fellings to take place after those in Asmári 2 and cleanings amongst young kail in 1889, and repeated at intervals of five years if possible. Four chaks have been formed *viz.*, Asmári, Matuli, Garan and Jognai. No fresh cultivation should be permitted.

	6	200	Consists of the left bank of the Missau road. It is tapped by by two large feeders of the above gád, so that the aspect varies between north-west, north, north-east, and east, but the prevailing one is northerly. The ground is rocky, except toward the north and north-west, and it is precipitous along the upper course of the stream.	30°—60°, average 40°	...	...	The underlying rock consists of limestone interbedded with shales and is exposed or covered with loose sandy loam in places three feet deep, whilst along the Missau road and along nálas there is about a foot of humus On poorly stocked spurs there is generally a very shallow soil of sandy clay.	The higher portions along the Missau road are stocked with rai, deodár, and kail with individual moru, but lower down the stock is mainly bán, the forest becoming more open. The bán is much damaged by lopping as well as by bears in search of its acorns Some of the deodár are well suited for timber There is an undergrowth of laurels, brambles, &c, in the stocked parts and of grass in more open localities.	From the Matuli khera to the Missau road and thence nearly to the Manjaun nála there is, with only a few blanks, splendid reproduction of kail and deodár, the seedlings being from 3 to 10 feet high. The reproduction of bán is not so good, but seedlings four years old and upwards are not altogether wanting	There are no roads except the Missau road on its southern boundary. The upper portion has been fire-protected for years, and the whole has been brought under protection No cháks exist and no fresh cultivation should be allowed. Improvement fellings to take place after those in Kanasar and Missau 7.
	7	160	Includes all the slopes below the Missau road between the Manjaun and Siári gads. It is divided into two portions by a prominent dhár, the higher part of which is more or less flat The aspect varies from west to north.	0°—55°, average 35°	...	...	The rock is chiefly shale of a reddish color mixed with beds of limestone. The soil along the Missau road is a rich, loose, dark loam about two feet thick and covered with a foot of humus Lower down, where the forest is more open, and along crests and spurs bands of sandy clay are interposed.	The upper portions along the Missau road and adjoining Manjaun and Siári gads are stocked with deodár, kail, rai, and moru, with a few bán below skirting Siari khera. Lower down these species become scarcer and are almost wholly replaced by bán and chír, the latter finally predominating The forest is generally rather open and very much so near the Mashak gad Bán is injured by the same causes as in the preceding compartment.	A very good advance growth of deodár and kail is found in patches on sites of old field Seedlings of bán and kail one year old and upwards are also met with, but in insufficient numbers.	There are no roads except the Missau road along the southern boundary. The upper portion has been preserved from fire for years, and the whole has now been brought under protection Improvement fellings to take place after those in Kanásar. The Siári khera has been formed into a chak.
Chátri ...	1	...	Consists of slopes running down from the Tanguti dhár as far as the path from Koti to the water mills on the Mashak gad It is bounded on the south by the Siári gad. The Tanguti dhar consists of bare rocky walls many feet high, and from it run down several spurs to the Mashak gád, dividing the ground into slopes facing the north and south-west, the general aspect being north-westerly.	Omitting precipices 30° to 45°.	..	..	The rock is limestone in the higher parts and friable shales lower down. The soil is a free, rich, dark-colored loam.	Along the boundary of the Kanásar block and skirting the Jogta khera there is a splendid crop of deodár and kail saplings and poles which extends along the slopes just below the Tanguti dhár as far as pillar No 25, being absent on the more precipitous ground. The rest of the compartment, excluding blanks near the Mashak gad, is stocked with a mixed but very open forest of bán and chír, the former being almost pure in nálas and mixed everywhere with the latter in varying proportions Bán, though on the whole numerically preponderating over the chír, is, owing to its being excessively lopped for fodder, in a very backward state.	The reproduction of deodár and kail when these species occur is very good, consisting of seedlings two feet and upwards in height, growing densely together. Bán and chír seedlings are very rare and the growth of those which exist is unsatisfactory	It was protected from fire for the first time this year; the deodár portion was previously fire-traced. Jogta khera has been marked off as a chak. If fire protection prove a success, chír may be felled hereafter.

APPENDIX C.

Description of Compartments—(continued).

Name of block	No. of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude	Rock and soil.	Stock.	Reproduction	Treatment.
Chatri	2	...	Consists of slopes on the right bank of the Mashak gád from compartment 1 to the newly-made fire line, and it is divided into several minor basins by spurs running down to the gád. Main aspects northerly and north-westerly.	30°—45°; average 35°, but the sides of deep nálas are much steeper	...	The underlying rock is shale capped near the Chátri dhár by limestone. The sub-soil is a loose clay of variable depth overlaid by a loose sandy loam	The higher portions with more or less northerly slopes are stocked with chír, bán occupying the most ravines. In the lower portions there are extensive areas of grassy blanks dotted with chír, bán, and kokát Kokat is most numerous along the Mashak gád, consisting of kakkar (Pistacia integerrima), rauni (Mallotus philippinensis), katula (Garuga punnata), timla (Ficus Roxburgii), bhedda (Ficus hispida), tilpara, (coeculus lanrifolius), sandan (Ougeinia dalbergioides), tungo (Rhus parviflora), &c. The bán is much lopped for fodder, and many chír have been hacked for jogan.	Almost totally absent, only a few individual seedlings of the different species being found in the lower portions.	A new fire line has been cut from the Mashak gád to the Tangutí dhár as far as pillar 51, forming the boundary of the Government forests. It was protected from fire for the first time this year, but the deodar portion was previously fire-traced Four chaks have been formed, viz., Balai, Sewa, Ghatawa, and Nakhiar, and fire lines might be burnt around the two latter in the winter when the snow is on the ground. The western portion was however burnt, and the line in future should be burnt in the winter along the fire line, not down the dhár.
	3	...	Comprises all land included in the forest boundary below the Kanasar block from the I class pillar No. 18 and II. class pillars Nos. 86 and 87 to the new fire line from Koki dhár to Khanipani, being bounded on the west by the new boundary line from I class pillar No. 26 to II class pillar No 37. General aspect easterly, but the higher slopes face the north-west and north-east	25° to 40°, average 30°; precipitous near the Koki dhár.	...	In the higher parts stocked with deodár and kail, the principal rock is limestone covered with a very rich, dark, free loam, about a foot deep, with a layer of humus above it In the lower portions the rock is mostly shale with huge blocks of trap, and the soil is shallow and more clayey.	Near the Kanásar block there is a splendid crop of deodar saplings and poles, with the usual mixture of kail extending down as far as pillar No. 7 on the Koki dhar Lower down nearer the new fire line, chír, bán, and a scrub of Rhus Cotinus put in an appearance, and bán is the predominating species along the Khanipani and for some distance up the slopes from that stream. The bán in the parts nearest Koti village is much lopped.	Advance growth of deodár and kail where these species exist is very good, being represented by a fairly dense crop of seedlings from 1 to 15 feet high of excellent quality In the oak forest ban seedlings are fairly numerous.	A new fire line has been cut from the Khanipani and Baipani forming the outer boundary of the forest and the whole protected from fire for the first time this year, although most of the deodar area was previously under protection Improvement fellings can be made in the latter portion when they take place in Kanásar, and a road through it already exists.

Kanásar ...	1	173	...	...	..	..	One compartment only (*vide* description of blocks).	...	..
Kopti ...	1	133	Consists of all slopes on the right bank of the Manjaun nála included in the block as well as the basins of its two main tributaries which rise just below Kopti tiba. The left flank of the northern dhár and the right bank of the main nála consists of bare precipitous rocks often forming walls and cut into deep gorges, but elsewhere the ground is fairly even with more moderate slopes. Aspects very variable, the left flanks of dhars and portions near Thona lani facing west and south-west, the right flanks or the larger area north and north-west.	In the northern parts and along the Manjaun nála usually over 45°, elsewhere on slopes facing west and south-west 35° to 45°, on slopes facing north-west 35° to 45°.	...	Mainly limestone interstratified along the Missau road and the lower course of nalas with beds of blue shales. In places in the higher portions clay slates of a yellowish color are found resting on the limestone. The subsoil is a sandy clay deep in places but wanting on bare precipitous rocks, and is covered with a dark, rich loam 6" to 1' deep. With the exception of portions in the north and near the Thona lani a layer of humus 3" to 1" deep exists all over the compartment.	The left flank of the dhár along the northern boundary is an open blank dotted with trees of deodar, kail, and bán; there is an open grassy blank near Thona láni, and the steep rocks along the Manjaun nála are also bare The portion adjoining the grassy blank near Thona lani is rather poorly stocked with karshu and the two firs, the former occurring more or less in patches with small, open, grassy blanks occupying the intervals. With this exception the whole is well stocked with the two firs. which extend all over the area. They are almost pure on northerly and north-westerly slopes where the forest is dense, but are mixed with deodár on westerly and south-westerly ones. the forest being much more open. Moru is found along the nalas, and karshu caps the Kopti peak There are a few yew in the higher portions, and a few cypress in the north on rocky ground. A good proportion of the stock consists of I. and II. class rai, morinda, and moru, but there are few mature karshu. Some of the rai and morinda are magnificent in the higher parts and along nalas, but along ridges and at unfavourable aspects they are only of average quality, many being unsound. The soil is covered with grass, ferns, indigofers, &c., in the open, and with brambles, indigofers, desmodium, skimmia, &c., under stock, together with a rank herbaceous growth during the rains. There are some ringáls in the higher parts.	Very poor in the higher parts, recent seedlings being almost entirely absent; whilst there are only a few old ones, rai and morinda on northerly aspects, karshu and rai on westerly slopes near Thona lani. A few young deodár are met with where the forest is open and along dhárs. Lower down the seedlings are more numerous, and in the lower half above the Missau road they are fairly abundant, especially on westerly and south-westerly slopes. The open blank along the northern dhár is being filled up with a splendid advance growth of kail from a few inches to 15 high, mixed with some established deodár and a few bán.	This compartment is now being worked for fuel, and the remaining area should be felled over immediately. The upper portion is tapped by two fuel roads, but others about a mile in length will have to be made in the lower part. The grassy blanks near Thona lani should be planted up with rai and karshu in 1904.
	2	74	Situated between two diverging spurs which branch off just below the Kopti tiba. The upper course of the Sisri gád runs through it and it is furrowed by smaller dry watercourses and traversed by numerous minor spurs from the western dhár. Predominating aspects are northerly and north-easterly with some minor north-westerly and westerly ones.	45°—45°, average 40°; along side of nalas and some minor slopes 30°—40°, average 35°; along dhárs and on most slopes 20°—30°.	.	As in the preceding compartment	Stocked chiefly with rai, deodár, kail, morinda, moru, bán, and kokát Rai predominates, and is found throughout the compartment. In the highest portions it is mixed with a little morinda, and with deodar and moru lower down; the former being well represented on westerly slopes and along dhárs. Some kail is mixed with the other species in the north-western corner, and the open blank in the same portion is dotted with kail and deodár. A fair percentage of the stock is composed of mature rai, deodár, morinda, and a few moru, the rai being most numerous on northerly aspects and in ravines in the higher parts, whilst large moru are found in many moist places and deodár more especially near the Kanasar block, going high up on westerly slopes The forest is dense in the higher parts, but is more open lower down, and very open along dhars and on the warmer slopes. Undergrowth as in compartment 1.	Very good advance growth of kail and deodár mixed with some rai, often forming thickets along the Missau road, and generally in the lower portion and along dhárs. It decreases higher up, consisting of scattered established seedlings of rai and morinda, but without any reproduction whatever in nalas.	Has been partially worked over, and the lower portion should be tapped after Kopti 1 is finished. Nearly a mile of fuel paths will be required. The blank in the eastern corner should be planted up with rai in 1904. The boundary between this compartment and Kopti 3 should be defined by a wire fence to prevent illicit grazing.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	No. of compartment.	Area in acres.	Configuration and aspect	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Kopti ...	3	95	Occupies slopes from the Kopti peak to footpath from Koti to Thona. The dhár between it and compartment 2 is inconspicuous, and the compartment as a whole consists of an extensive more or less uniform slope. General aspect north-east with minor slopes facing east and more rarely the north.	Varies from 20° to 45°, average in higher third 30°; below the lowest fuel road 40°, and lastly on the grassy blank 28°.	...	The usual limestone mixed with shales and clay slates. The sub-soil is a free clay more than 3' deep, along minor and rounded spurs and on the grassy blanks in the middle and eastern portions. The top-soil is a rich, dark-colored, free loam about a foot deep under the stock, where there is also from 6 to 18 inches of humus.	The highest portion is stocked with rai and morinda, except along the Thona boundary where there is some karshu. The stock consists mostly of mature tall and straight trees, many of which, however, are unsound. Below the lowest fuel road, except in the western corner, mature trees become rarer, saplings and poles beginning to predominate, and deodár saplings and poles forming an important proportion of the stock. Kail also is found here, especially near the boundary of compartment 2 and the Kanaar block. The lowest portion, except a strip along the above block stocked with deodár, rai, and kail, is a grassy blank of large extent dotted with kail, rai, and deodár seedlings as well as with patches of cultivation. The forest is open in the higher parts, but dense between the lowest fuel road and the grassy blank. The saplings and poles are superior in quality to the trees. Undergrowth as in compartment 1.	The highest portions are without reproduction of any kind save for patches of advance growth of rai, morinda, and karshu along the Thona boundary. Below the lowest fuel road it is, however, fairly good, consisting of patches often very dense of advance growth of rai, deodar, kail and karshu, the seedlings being from 6' to 15' high and very vigorous. There is similar growth on the west down to the Missan road, but the seedlings in the grassy blank are bushy, being much browsed by sheep.	Improvement fellings should be made in the stocked portions after those in Kopti 2 have been completed. About half a mile of fuel paths will be required.
	4	104	Situated below compartment 3 as far as the Missan road and similar in configuration and aspect to that compartment, with somewhat deep nálas.	Variable: 35°—45° in the eastern and western parts, but in the greater part of the area from 20° to 35°.	...	Rock and sub-soil as in the preceding compartment. The top-soil is a very shallow loam under the stock and almost wanting in the open grassy blanks where the clay is much developed. There is no humus.	The middle portion, occupying nearly half of the entire area, is an open grassy blank dotted with saplings and poles, together with a few mature deodar, kail, and bán. In the stocked eastern portion rai predominates in the higher parts, and in the lower deodár with a sprinkling of kail and bán. In the stocked western portion deodar more or less in patches predominates, accompanied by rai, kail, and bán, saplings and poles much predominating, the mature trees being generally confined to the sides of nálas. The forest is nowhere very dense, but is often open. The mature trees are much branched, and often flat-crowned and hollow. The saplings and poles are of a very good quality.	Splendid advance growth of kail and deodar with a large number of young bán in the lower and of rai in the eastern extremity and in the higher parts, is found all over the compartment. The seedlings are from 3' to 15' high and very vigorous. The kail thickets are frequently impenetrable.	Improvement fellings to succeed those in Kopti 2, but only a few trees can be felled. The cleanings amongst young kail should be made in 1892, and subsequent dates as in para. 177. Parts of the Saya dhár and China chaks are in this compartment.
Asmári ...	1	90	Occupies the highest part of the block, being a narrow belt of land included between it and compartment 2 is inconspicuous, and the compartment as a whole consists of an extensive more or less uniform slope. General aspect north-east with minor slopes facing east and more rarely the north.	Along the main and other dhára over 45°, but as a rule from 30°—45°; average 35°.	.	The usual limestone overlaid near the Lokandi láni with soft crumbling blueish shales. The sub-soil is a	The main spur from beyond pillar No. 87 to pillar No. 92 is occupied by saplings and poles of karshu, which, in places especially with westerly and north westerly aspects, comes down	Recent seedlings are generally wanting, but established seedlings of deodar, rai, and karshu, from 3 to 10	Only dry wood to be taken out.

		ween the Deoban-Bodiár road and the main ridge and extending from the Lokandi to the Thona lani. The main ridge is very precipitous and tortuous, the rocks being very prominent. Main aspects are north, north west and north-east.			sandy clay much developed along dhárs with rounded edges and on the flat peaks of the main spur, whilst resting on it is a free, dark loam one-half to one foot deep. A thin layer of half decomposed needles of rai, &c., covers the northerly and north-westerly slopes.	to the Deoban road; as a rule, however, it does not extend beyond one or two chains from the main ridge. Elsewhere rai, with a few morinda in highest portions, is the predominating species, which on westerly and south-westerly slopes is mixed with deodar suplings and poles; whilst individuals of kail, yew, and moru occur here and there. A good many acres on westerly and easterly slopes of minor dhárs are open grassy blanks dotted with deodár, rai, and karshu trees. Mature trees bear a small proportion to the whole stock, which is chiefly composed of saplings, poles, and young trees. The forest is very open on westerly and easterly slopes, and is nowhere very dense. The trees are stunted, branched, and unhealthy, whilst in addition the karshu is unsound. There is the usual brushwood, cotoneaster, brambles, skimmia, ringál, &c.	feet high, are met with occasionally in patches. Slopes facing the north are devoid of production which is on the whole very poor.	
2	120	Consists of the slopes between the Deoban, Bodiár, and Missau roads as far east as the dhár forming the water-shed line of the Manjaun nála. The main dhár from the Deoban road to the Dodara peak is sharp-edged and the rock is frequently exposed throughout the compartment. Aspects north and north-west, west and south-west.	Edges of dhárs and sides of nálas precipitous, elsewhere slopes from 30°—45°, average 40°. In northern part 20°—35°, average 25°.	...	Limestone predominates everywhere, but it is, in places, mixed with beds of shales varying in color from a dark blue to a light yellow and of different degrees of hardness. The sub-soil is a sandy clay up to three feet in depth and, overlaid with a quarter to one foot of a free loam. Humus consisting of half-decomposed leaves is found on northerly and north-westerly slopes, but is never more than half a foot deep.	The firs and deodárs, with a small sprinkling of kail and moru, are the principal constituents of the forest. Rai, mixed with a few morinda in the highest parts, occupies the beds of nálas and slopes facing the north and north-west, whilst deodár predominates on slopes with westerly and south-westerly aspects; most of these slopes, however, being either grassy blanks or open blanks dotted with individual deodár and kail. The part between Lokandi lani and the Missau nála is also poorly stocked, the forest being interspersed with large open grassy blanks. Elsewhere the forest is fairly dense. There is a fair percentage of mature rai in ravines with tall, straight, and clean boles, although they are occasionally hollow, and of much branched deodár on the open blanks, with some fine trees in nálas. The undergrowth consists of grass and ferns in the open blanks, of the usual brushwood elsewhere, with ringáls near Dodara, and in some moist ravines.	North of the Missau nala a splendid advance growth of kail and deodar with a sufficient number of rai seedlings of all ages covers the ground especially on the rounded dhárs and slopes, being densest in the open parts. To the south of the above nála the seedlings are less numerous, and there are very few on some south-westerly slopes, *e.g.*, that of the Auni dhár. Advance growth of rai and deodár also skirts the Deoban road where they are stunted and damaged by grazing.	Improvement felling to take place in the deodár-producing portion after those in Asmári 3 and up to ten acres containing young deodár which are kept down by grazing to be fenced at a time after Asmári 3 has been similarly treated. Fuel path to be made from the Missau nála and continued through Asmári 3 to Thona láni.

Description of Compartments—(continued).

Name of block.	No of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude	Rock and Soil.	Stock.	Reproduction.	Treatment.
Asmári ...	3	170	Consists of that portion of the left half of the Manjaun nála between the Deoban, Bodiárand the Missau roads. The higher portion is cut up by numerous dry water-courses feeders of the chief nála which is a perennial stream. The spurs running down from the Deoban road and from the western ridge divide it into numerous slopes facing north, north-east, east, and north west, with some smaller ones facing south-east, south-west, and west.	The northern part from the nala to half way up the slopes are precipitous, elsewhere the gradient varies from 35° to 45°, but the beds of nálas near the Deoban road and the blank near Dadora peak are more or less flat.	...	As in the preceding compartment	A large area consisting of slopes with easterly, south-easterly, and south-westerly aspects, and in one or two cases with north-easterly ones, is taken up by open grassy blanks in some cases dotted with mature deodár, rai, and kail, in others without any tree-growth. Slopes facing the north, north-east, north-west, and rarely the west are well stocked with rai, deodár, moru, kail, and occasionally with some morinda in the higher parts. A little karahu mixed with rai is met on a westerly slope below the Deoban road, and deodár predominates on small north-easterly slopes between the Deoban road and a spur from the Dadora peak. Rai is, however, usually the prevailing species with deodár, moru, and kail as its associates. More than one-sixth of the stock consists of mature trees which are scattered throughout the stocked area, but are most numerous along nálas and at northerly aspects. The forest is usually an open one, but becomes denser along the chief nála. Some of the rai are tall and free from knots, but most of the largest trees are hollow. Old deodár are much branched and moru are usually unsound. The younger classes are, as a rule, of a much better quality.	A portion of the open blank in the northern portion has a very good advance growth of kail mixed with deodár and rai, and seedlings of the last two species are also found along the western dhar, but reproduction in the stocked area is very poor, consisting of some rai, deodár, and moru seedlings found here and there in solitary patches of from 5 to 30 plants, such patches being commonest on slopes facing the north In the higher portions along the Deobán road facing the north-east reproduction is almost *nil*, but the westerly, south-westerly, and north-easterly slopes are dotted with seedlings of rai, deodár, and kail.	Improvement fellings to take place after those in Missau 6. Ten acres either in one, two or more plots to be wire fenced in order to protect the young deodár from being grazed down, and when the young plants are sufficiently tall, the fence to be moved to another place until the whole area is well stocked with deodár saplings out of danger from grazing animals. No Gujars should be admitted into this compartment. About a mile and half of fuel paths will be required, the fuel being exported *viâ* Thona láni.
Maráuwa ...	1	137	Consists of that portion of the basin of the Barni nala below the Missau road included within forest boundaries. The eastern and larger portion is cut up by a succession of smal spurs, offsets of the China dhár, but near China khera there is a more or less continuous slope. Aspects east, north-west, north, and rarely west or north-east.	35° to 45°, average 40°; along China dhár 30°—40°, average 35°, near China khera the gradient are gentle.	..	Limestone, whilst in certain localities as along the Barni, nala and in places along the Deoban-Kanasar road blue shales also appear. The sub-soil is a rather stiff clay in places more than three feet deep and is overlaid by a very shallow free loam wanting however, along dhera. There is a thin layer of humus only on the left stocked slopes of China dhár.	The portion just below the Deohán road from Kanásar as far as China khera is covered with patches of nearly pure deodár saplings and poles, the number of mature trees being insignificant. These patches are of small extent and are interspersed with numerous grassy blanks. The upper portions of the slopes of the China dhár are covered with a good growth of deodár, rai, kail and bán, but lower down deodár and rai become rare, whilst kail and ban predominate A few chír are found near pillar 103 and a sprinkling of ayár, burana, moru and kokát is met with in the southern portions With the exception of bán the percentage of mature trees is very small, this being notably the case for deodar and kail. Besides the open blanks near the Deoban road there	In the western part there are abundant seedlings of deodár from 3′ to 15′ high found more or less in patches, but wanting on slopes facing the east. Recent seedlings are also common as is also advance growth of kail and ban though less abundant than the deodar Blanks near China khera and almost the whole of the left flank of the China dhar is covered with vigorous seedlings of kail, deodár, and bán. Some established rai	The whole area should now be brought under fire protection and not the upper portion only Improvement fellings to be made after those in Kopti 4. Cleanings amongst the young kail in 1890 and subsequent dates inaccordance with paragraph 177. About a mile of fuel paths will have to be made. Two chaks, Simai and China, have been marked off.

						are similar and extensive blanks along the Chína dhár sometimes containing a few mature bán and kail. The forest is most open along this dhár and densest near the Barni nála. Undergrowth of desmodium, indigofera, brambles, barberry, &c, in moist places.	seedlings also occur and the advance growth of kail mixed with some deodár and bán near Chína khera is magnificent.	
Maráuwa ..	2	138	Comprises the slopes on the left bank of the Thona gád from the Deoban-Kanéar road to the forest boundary, as far east as the Thona block. Spurs from the Chína dhár with nálas between them cut it up into very small basins with slopes facing east and north-east, rarely north or south-east.	30°—40°, average 35°, going down to 20° in places. The sides of nálas are very steep usually exceeding 45°.	...	Along dhárs and in the higher portions generally limestone mixed with shales, and in the lower slopes shales of various colors and degrees of hardness. The sub-soil is clayey, varying in depth from a half to three feet but wanting on rocks. The top soil, which is sometimes absent, is a loam extremely shallow on blanks but 3"—6" deep in the stocked areas. Humus is usually absent.	Very poor, consisting of bán, moru, kail, chír and deodár with a sprinkling of kokát, ayar and lurína. Open blanks dotted with individual bán, kail and deodar occupy the greater part of the compartment. The stocked area along the outer boundary contains an open forest of bán and chír, whilst along nálas on their upper courses and on the slopes just below the Deoban road the species are bán, moru, deodár and kail. A few rai also occur in the upper course of the Thona páni. Nearly one-fourth of the whole stock consists of mature trees well distributed throughout, except that the chír are found only near the outer boundary. There is the usual undergrowth of brambles, barberry, desmodium and indigofera along nálas with grass and ferns in the open, but there are no ringals.	A good advance growth of kail mixed with seedlings of deodár and bán is found just below the Deoban road and small patches of kail seedlings are also met with in the southern portion of the open blanks. Elsewhere the blanks are merely dotted with an insufficient number of kail, deodár and bán seedlings, whilst there are very few chír seedlings which have been much injured by fire. The young bán have suffered much from grazing.	Fire-protection need not for the present be extended below the Auna khera chak, but nothing above should be burnt, and in this portion improvement fellings should be made after those in Maráuwa have been finished. The fellings should be mainly confined to the sides of nalas. Cleanings amongst the young kail should be made at the same time as those in the preceding compartment.
	3	108	Comprises all the slopes within forest limits on the right bank of the Maráuwa gád below the fire-line. The whole area is rugged, precipitous and rocky. Main aspect westerly.	Usually over 40°, though some blanks between precipices have slopes of from 35°—40°.	...	The usual limestone along the dhárs and precipices, whilst in the lower portions there is a hard, compact shale. The sub-soil where it exists is a sandy clay 1½ to 1 foot deep and resting on it is a very shallow, dry loam mixed with fragments of the underlying rock. Humus is absent.	With the exception of three small and very open patches of bán and chír in the western portion the whole compartment is an open grassy blank dotted in the lower half with a very few mature bán, deodár kail, chír and rai of inferior quality.	Next to none ...	To be kept as a grazing ground.
	4	89	Comprises all the slopes on the right bank of the Maráuwa gád above the fire line as far as a small dry watercourse which separates it from the Kanjátra block. Similar in configuration and aspect to compartment 3.	As in compartment 3.	...	As in the preceding compartment.	The whole compartment is an open blank dotted with trees of deodár, rai, kail, moru and bán along the Maráuwa nála but without any tree-growth along the Durúni dhár.	Only a few scattered seedlings of the component species are found here and there, and these are stunted, being browsed down by sheep and goats.	Nothing to be done.

APPENDIX C.

Description of compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradiant.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Marśewa ...		108	Consists of that part included within forest limits of the basin of the feeder of the Marśuwa gád, which passes near Álu-ka-thát and of slopes from the Durání dhár above the old Simla road. It is broken up by precipitous rocks and is traversed by numerous sharp-edged dhárs and dry watercourses. Prevailing aspects northerly and north-easterly and just above the Simla road easterly.	Ruling gradient above 40°, but less on the slopes above the old Simla road.	...	Ditto ...	The portion above the old Simla road is a grassy blank with only one or two mature ban and a few rai and moru in the eastern corner. The rest of the compartment is rather poorly stocked with bán, moru, kail, rai, kokát and deodár, the rai and moru being found in the highest parts below the Durání peak, whilst bán and kail predominate in the lower parts, though the latter species occurs as high as the Durani peak. Deodár is very rare and the usual kokát occur along the nálas. A fair proportion of the stock in the upper half is formed of I and II class trees.	Very poor. A few established seedlings of deodár, rai and moru are met with in the higher portions and of bán and kail along nálas and moist places in the lower half, but seedlings are absent over the greater part of the compartment.	To be brought under fire-protection.
Thona ...	1	58	Occupies the headwaters of the Thona páni between the Bodiár road, and a foot path branching off from that road towards the Kopti block. General aspect south-easterly with some minor slopes facing the south, north-east and east.	30°—45°, average 35° above the upper fuel road; between this road 10°—25°, average 20°; along north boundary 30°.	...	Limestone mixed with shales of various colours and degrees of hardness forms the chief rock. The sub-soil is a sandy clay about two feet deep on an average and mixed with fragments of the underlying rock. The top soil is a loose and fairly deep sandy loam. Humus is absent save for a thin layer in the northern stocked part of the area.	Very poor on the whole. Nearly half the area in the middle of the compartment and along the northern boundary is occupied by open grassy blanks dotted with individual karshu and rai In the stocked areas the trees are karshu and rai near the Kopti peak and the spur coming down from it, and rai in the eastern extremity just below the Bodiár road. There are also a few trees along the Thona páni. Both karshu and rai are stunted, hollow and much branched and neither grow vigourously nor attain large dimensions. The percentage of mature trees is very small, saplings and poles predominating everywhere.	A good number of karshu and rai seedlings exist all over the compartment except on the grassy blanks to the right of Thona pani. The seedlings are from a few inches up to 10 feet high and are most numerous on slopes facing the south-east in the northern part. Young karshu occur in patches, rai is more evenly distributed, but young plants are rather sickly.	To be worked for fuel after Kanjstra, 4 No roads will be needed. The grassy blank to the right of Thona pani to be planted up in 1905 with kail, karshu, or rai, kail in preference.
	2	62	Situated between the main ridge and the Bodiar road, being bounded on the east and west by the Kanjstra and Asmári blocks respectively. The main ridge is sharp-edged and posses-	Along the main ridge over 45°, just above the Bodiár road 30°—45° average 40°.	...	Limestone with soft shales resting on it in places, but occasionally forming cliffs. The sub-soil is a dark loamy clay with a rich loose loam from a half to one foot deep resting on it.	The many peaks along the main ridge are capped with karshu and a few morinda saplings and poles. The karshu is stunted and hollow and there are but few mature trees. The remaining area is stocked with firs, there being only a few individual trees of moru, kokát, deodár, kail and yew. Morinda is most abundant, but consists chiefly of saplings, poles and young trees, whilst mature rai are commoner, especial-	Somewhat backward. A few recent and also established seedlings of karshu are met with along the main ridge and advance growth of morinda occurs in patches in the upper portion. Recent seedlings are as a rule absent and,	To be worked for fuel after Thona 1, but as fellings have already been made not much can be taken out. No roads will be needed. The small blanks to be planted up in 1905.

			ses several prominent peaks and the slopes are uneven Main aspects north and north-east.			ly along the Bodiár road. The density is fairly uniform except in nálas, where owing to the movement of snow in winter there are but few trees.	there is no reproduction in ravines	
Thona	3	211	Situated between the Deoban-Bodiar and the Deoban-Kanásar roads, and bounded on the east and west by the Kanjátra and Kopti blocks respectively It is traversed by numerous dhárs and small watercourses; some of the dhárs are sharp-edged, and the sides of nálas steep and in many places precipitous General aspect northerly, but the open blank in the north-western corner faces the east and south east, as does a portion of the slope from the peak in the middle of the compartment.	10°—20° in the beds of the two large nalas. Elsewhere 30°—45°, average 40°, but exceeding this just above the Deobán-Kanasar road.	...	The usual limestone rock and shales, the latter being rather clayey along the Deoban-Kanásar road. The sub-soil is a sandy, loamy clay two to four feet deep but wanting on rocks. In places bands of a stiff clay crop out to the surface. The top soil is a rich dark, moist loam, fairly deep where it exists and mixed with fragments of the underlying rock A layer of humus from three to nine inches deep exists on northerly slopes.	The slope adjoining the Kopti block is an open grassy blank with a few trees of kail, rai, moru and bán; grassy blanks also occur at Sarsuti Thách, and on the eastern slopes of the peak situated in the middle of the compartment. Elsewhere there is a forest of chír mixed with a few kail, karshu, moru, and deodár. Rai is found everywhere, morinda just below the Bodiár road and on the peak just mentioned, whilst karshu is found to the west below compartment 1, and, deodár and kail generally on slopes facing the north-east and east, just above the Deoban-Kanásar road. Moru occurs in moist ravines. There are a fair number of mature rai, moru, karshu and deodár, but the younger classes constitute ⅞ of the stock. The forest is better stocked in the lower than in the upper half and is denser on northern slopes, those facing east being often very open The quality of the stock is good. Undergrowth of grass, indigofera, desmodium, brambles, barberry, &c., with some ringal in the higher parts.	A very good advance growth of kail and deodár with seedlings of rai and moru exists to the north-west of Thona-páni, recent seedlings being also present, but seedlings are absent in the other blanks save for a few young kail and deodár in one or two places. Established young rai and morinda 3 to 10 feet high in groups of from 10 to 30 are found in the higher portion, whilst lower down there is good reproduction of rai, kail, deodar and moru, the seedlings being of all sizes up to 12 or 15 feet high. The easterly slopes near the western boundary contain a good number of karshu seedlings of every age and size. There are next to no seedlings in the beds of nálas.	To be worked for fuel after Thona 2. The whole compartment seems to have been felled over before, but there are certain localities, especially just above the Deoban-Kanásar road, from which more trees can be taken out. The open blank in the western portion of the compartment is being filled up with natural seedlings, but the other grassy blanks may, with advantage, in 1905, if in their present condition, be planted up with kail and deodar near the Kanásar road and with rai near the Bodiar road whilst karshu may be tried on the slopes to the left of Thona páni. This compartment, which is now opened departmentally to grazing, must be reclosed when the fellings take place.
	4	130	Consists of that part of the basin of the Thona páni below the Deobán-Kanásar road, as far west as the Maráuwa block. The Bari dhár has sharp ridges and the sides of nálas are steep and broken up by precipitous rocks. The minor dhárs converge towards the lower part of the compartment Main aspects north and north west, north east and east.	30° to 45°, average 40°; but over 45° along nálas and on some slopes.	...	Limestone interstratified with beds of shales of various colors and degrees of hardness constitutes the chief rock. The sub-soil is a sandy clay much developed along prominent but rounded dhárs, and wanting on the steep or precipitous sides of nálas The top soil is a rich, free, dark loam from a half to one foot deep, on northerly slopes and on well-stocked portions, but Shallow in the open grassy blanks Humus exists on more or less northerly slopes, but is absent from easterly and south-easterly ones.	West of the Thona páni there is an open blank with a few trees of deodar, kail and bán, as is also the case with a small slope from the Bari dhár near the Kanasar road. The rest is more or less uniformly stocked with moru, bán, rai, deodar, kail, and kokat, with just a very few chír, morinda, cypress, ayár and buráns. Though moru is numerically more abundant than the other species, it predominates only in the lower portions of the compartment together with bán, deodar and kail, whilst rai predominates in the higher parts facing the north and in ravines with deodar, kail, and moru for its companions. Kokat occurs along the nalas. The mature trees are common in the higher portions and along nalas they are tall, straight and sound, The forest is a fairly dense one, but becomes open on slopes facing the north-east and east.	The open blanks are getting well covered with patches of kail and deodár advance growth except the lower portion of the blank near Thona pani. Seedlings are scarce in nalas and on northerly aspects near the Kanasar road, but there is very good advance growth of kail, moru, deodár and bán, a little way below right down to the lower extremity Recent seedlings are commonest on the flat dhárs.	To be worked for fuel after Thona 3, and as it has not been touched before, a good many mature trees can be taken out. Over a mile of fuel paths will have to be made. Fuel from the lower portion can probably be exported *viâ* Maráuwa 4, which will necessitate the widening of the fire line.

APPENDIX C.

Description of Compartments—(continued).

Name of block	Number of compartment	Area in acres	Configuration and aspect	Gradient.	Altitude	Rock and soil.	Rock	Reproduction.	Treatment.
Kutmar	1	186	Occupies the southern slopes of the Deoban spur included between the main dhar and the Sunla road from the outer boundary near Asmotiand as far east as the Gasba dhar. The ground is rugged and precipitous, outcrops of rock being common, general aspect southerly	Excepting precipices 30°—45° with some minor slopes of 20°—35° only Often more or less flat along the main ridges	..	The usual limestone greatly developed along dhars and in the higher portions and interstratified with a few beds of crumbling shales in the lower portions. The subsoil is generally a loose clay of variable depth and mixed with fragments of the underlying rock, in the stocked portions there is a rich, dark loam three feet to one foot deep with a layer of good humus above it.	The upper half of the compartment contains a well stocked forest of karshu and rai mostly saplings and poles, the oak forming nearly two-thirds of the whole stock and predominating on all slopes with westerly south westerly and south-easterly aspects whilst rai occupies the small extent of north westerly ones, mixed, however, with a small percentage of karshu. Other species—deodar kail, lauri, thuner, moru, ban, burans and kokat occur here and there in magnificent numbers. The proportion of mature trees to the young stock is rather small, such trees being mainly rai, whilst I and II class karshu occupy the flattened tops of ridges along the main spur, but such trees are hollow, dwarfed with unhealthy crowns, whilst the saplings and poles are much damaged by excessive lopping The poor quality of the stock is also due to a great extent to the exposed position of the compartment. The rai on northerly slopes are however in a much better state, the mature trees having clean boles whilst the saplings and poles are vigorous with healthy crowns The lower half of the compartment is a grassy blank with one or two patches of rai near the Gasba dhar These rai are sickly and much branched, and owing to the unfavorable conditions of aspect and altitude many of even the III class trees may be considered mature There is the usual undergrowth with ringals near the main ridge.	A splendid advance growth of karshu occupies the stocked portion on slopes with westerly and south westerly aspects and the open flat tops of spurs. The seedlings are of all sizes up to 10' to 12' high, but are generally found in patches where the stock is rather open, though established seedlings are met with everywhere except under very dense cover Recent seedlings are also pretty common The advance growth of oak mixed with some morinda is particularly vigorous along the main ridge The reproduction of rai is backward, recent seedlings being wanting and established ones stunted particularly at the lower altitude.	To be worked for fuel after Thona 4, and a fuel road to be made joining the Bodhar-Deoban road. The villagers may be allowed to cultivate the unassessed patches in the blank area on payment of rent to the Forest Department.
	2	85	Occupies the upper and southern slopes of the Deoban spur from the Udna peak to the Gasba dhar and the whole left flank of the latter It is cut up by numerous gullies and a high limestone precipice traverses its upper part from one end to the other, whilst huge limestone blocks are scattered all over the compartment The top of the main spur is more	Excluding the precipices 25°—40°, average 35°	...	As in compartment 1	By far the greater portion is a grassy blank without any tree-growth along the boundary line and only dotted with individual karshu and moru in the vicinity of the stocked area from pillars No 77 to 79 The stock occupies a narrow belt of ground extending in breadth from the main ridge to the top of the precipices except a small piece above pillar No 72, which nearly reaches the outer boundary, and a second isolated piece above pillars 77 and 78 in a shallow nala. It is composed mainly of karshu and rai with a small sprinkling of kail, morinda, moru and kokat, but the oak forms over two thirds of the stock, chiefly in the form of saplings and poles, although there are a fair number of III class mature and exploitable karshu as well as rai Rai occasion	Rai seedlings are rare, and are bushy save under the stock, where they are from 3 to 6 high The advance growth of karshu is more numerous and vigorous, but it is patchy and occasionally absent. There are also a sufficient number of recent seedlings of karshu.	To be worked for fuel after Kutmar 1. One fuel path will probably serve both compartments.

			or less free from precipices. Aspects south-west and south-east.			ally predominates on some slopes of small extent facing west. Slopes facing the south-east are very poorly clothed, the trees being in groups interrupted by blanks and the forest elsewhere is more than half stocked. The quality is worse than in the preceding compartment, both karshu and rai being much branched, crooked, dwarfed and rarely attaining a diameter of over 18', whilst a number of them below this diameter are actually dying out. The karshu is much lopped.		
Kanjátra	1	134	Included between the main ridge and a fuel path leading from the Kanjatra stables to the Missan road, being bounded on the west by the Bari dhár and divided into numerous slopes by a succession of spurs and dry watercourses running down from the main ridge, which is sharp-edged. General aspects north, north-east and north west, though some slopes from the Bari dhár face east.	Above the Bodiár road 30°—45° and sometimes precipitous as towards the west Below the road usually 30°—40° but gentle gradients of 10°,—30° occur near Kabatra.		The usual limestone with in some places very soft clayey shale resting on it. The subsoil is clay, rather stiff along dhára and on peaks, but sandy in other places varying in depth from 6" to 3', though wanting in places. The top soil where it exist is a free, moist loam deep on northerly stocked portions but shallow along dhára and in open grassy blanks. Humus usually covers the soil under stock, but is absent from the grassy blanks.	Essentially a rai forest, the rai being mixed along the main ridge with a little karshu (mostly saplings and poles) and between the ridge and the Bodiár road with an appreciable number of morinda, a few of which are also found below the road. Kail though scattered throughout is most conspicuous along the Bari dhár where there are a few deodár as well. Individual moru occur here and there below the same road. The Bari dhár slopes below this road consist of open grassy blanks and the Kabatra fields A few smaller blanks are also scattered over the compartment. The proportion of I class trees to the younger classes, is small, the former occurring only here and there on northerly aspects and below the Bodiár road. In the higher portions saplings, poles and young trees form the entire stock. The forest is moderately dense in ravines in the lower half and on more or less northerly slopes, but is very open on easterly slopes and towards the western boundary. Trees of all classes along the main ridge are stunted, knotty and mostly unsound, but there are some fine, tall and sound trees in the lower portion and along the nálas Undergrowth consists of grass and ferns in the open, and of ferns, skimmia, daphne, brambles, barberry, desmodium, &c, in ravines, whilst ringal is found everywhere. There is a dense herbaceous growth in the rains of strobilanthes, &c.	Some karshu seedlings of all sizes are found on the main ridge, and along the Bari dhar there is a dense, vigorous advance growth of kail and deodar with some rai and moru seedings forming in places almost impenetrable thickets; elsewhere reproduction is very poor, consisting of very scattered fir seedlings 3' to 15' or perhaps more often altogether wanting, especially in ravines, owing to the action of the winter snows There are a few kail, deodar and rai seedlings in the short slopes between the fields at Kabátra.	To be worked for fuel after Mohna 3, but there are very few exploitable trees. Twenty-two acres under forest have been sown up with the firs, *vide* para. 85 and a number of large trees have just been felled to let in more light. The lines must be resown where necessary and kept weeded during the rains. The blanks including Kabitra fields should be planted up in 1892, using rai in the higher, kail and deodár in the lower parts.
	2	67	Situated below the Tons road, the road leading from the Kanjátra stables to the Missan road and this latter road, divided by a succession of spurs and nálas coming down from the main ridge into numerous slopes facing the north, north-east and north-west, with portions below the old Simla	30°—40°, average 35°, but over 45° along the sides of nálas; whilst in a few places, as near the stables, less than 30°	...	The ordinary Deoban limestone with in places soft crumbling shales either resting on it or caught up in its folds. The subsoil is a pure clay much developed along dhárs and in the open grassy blanks. It is overlaid by a rich, dark, free loam, fairly deep on northerly aspects and in ravines, but shallow elsewhere and wanting on precipices and in some blanks.	A fir forest, morinda being the most numerous and extending along deep and moist ravines and on northerly slopes down to the lower boundary of the compartment. Rai predominates towards the west, but the slopes of the peak to the west of the Kanjátraláni are covered with more or less pure morinda, the peak itself being capped by karshu which goes down the slopes facing the west and east for a few chains and also occurs on the slopes on either side of the Marauwa nála between the old Simla and Missan roads A little deodár and káil, chiefly of the younger classes, are found mixed with rai in the western portion, and moru is found everywhere in moist	Very poor in the ravines and in the well-stocked portions, but the dhars are fairly covered with advance growth. Patches of young morinda of all ages with some rai seedlings are found in the eastern parts Karshu seedlings of all sizes are common on the upper slopes of the peak to the west of the stables, and a few seedlings of karshu and rai are found in the open blank	Fellings for fuel to be made after those in Kanjátra 1. Mature trees have already been felled over various parts, but in certain localities, especially in the eastern and higher portions, a good many mature fir can be taken out. Only about half a mile of fuel paths will be necessary The sow-

APPENDIX C.

Description of Compartments—(continued).

Name of block.	No. of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
			road facing west or south-west.				ravines where there are also a few maples and horse-chestnuts. There is a small grassy blank near the stables and other small blanks are found along the Missau road. Westerly slopes between the Maráuwa nála and the Durání dhár are open blanks, dotted with a few rai, deodár and moru in the lower and karshu in the higher parts. I class trees do not form a large percentage of the stock, many of them having been felled, but those which still exist are found chiefly on sheltered slopes and sides of nálas, whilst the younger classes predominate on ridges, peaks and exposed slopes. The forest is densest in the east, whilst in the west on exposed slopes and on dhárs it is very open. The younger trees are of a good quality and there are also some fine, well grown, sound fir in the upper course of ravines, but in the more open parts they are knotty, much branched and occasionally unsound. The undergrowth is similar to that in compartment 1.	north of the Maráuwa nála. The open blanks along the Missau road are also dotted with a few rai, deodár and moru seedlings, the reproduction of deodár being best on north-westerly and westerly aspects in the western half of the compartment	ings mentioned in the preceding compartment extend for a short distance below the fuel path from the Kanjátra stables. The blanks to be planted up in 1893.
Kanjátra	3	176	Consists of the slopes below the Missau road from the Durání dhár to the Paniswa nála. It is cut up into many minor slopes by several secondary spurs and watercourses. As a rule the sides of nálas are steep and in many places they form rocky walls; some dhárs are also sharp-edged and broken up by precipitous rocks. The dhárs just below the Missau road are flat-topped. The slopes on the right bank of the Maráuwa gád face west and south-west, those on the left bank north, north-east and north-west as a rule.	Excluding precipices 35°—40°, reaching 45° occasionally in the east; often as low as 20° near Jhalkúri fields and on the flat-topped dhárs.	...	Limestone with a crumbling shale resting on it along the Durání dhár; similar shales as well as clayey slates are also found in other parts, especially where the gradient is gentle and along the lower course of the Maráuwa gád crumbling shales abound. The subsoil is a sandy clay of variable depth, wanting on precipitous places, but with a depth of over 3′ on flat dhárs with gentle gradients. The top soil is a dark, loose loam, shallow in open places, but deep in some moist ravines. Humus is found only on northerly, north easterly, and north westerly well stocked portions.	A forest of firs mixed with deodár, kail, moru and kokát. In the lower more or less exposed portions rai is mixed with deodar and moru and towards the west kail becomes abundant. Deodár and kail occupy north-westerly, westerly and north-easterly slopes, but moru occurs everywhere irrespective of aspect, provided the place is sufficiently moist and sheltered. Open grassy blanks occupy more than half the compartment they occupy the right slopes of the Maráuwa gád, the flat tops of most of the spurs, and the slopes from them to within a few chains of the nálas, *i. e.*, nearly the whole of the middle of the compartment with the exception of strips along the nálas. These blanks are dotted with mature rai deodár and moru usually much scattered and but rarely forming groups. The portion between the Paniswa nala and its chief feeder is well stocked with a mixture of all the component species. Moru predominates near nálas where there are also some kokát such as horse chestnut, maples, willows, viburnums, holly, &c. There are a fair number of mature firs and moru, many of the former being tall and well grown especially in ravines, but a larger percent-	A few very stunted and bushy rai, kail and moru seedlings occupy the higher slopes of the Durání dhár, becoming rarer along the headwaters of the Maráuwa gád where some established fir seedlings occur in patches. Westwards reproduction improves except in nálas and there are seedlings of deodar, rai and kail of all sizes up to 10′ with some moru near the parent trees. There is very good advance growth of deodar and kail along dhárs and on north-westerly and westerly aspects in the western portion as also to a distance of some chains around the stock in the open grassy blanks, but in the middle of these blanks seedlings are	The grazing board is wrongly placed, so that the portion between the Maráuwa gád and the Durání dhár is now grazed over instead of being closed. This should be rectified by removing the board to the Durání dhár. Fellings for fuel should take place after those in Kanjatra 2, although similar fellings to those made in that compartment have already taken place. Many trees can be removed from the sides of ravines without endangering the future of the forest. About a mile of fuel paths will be necessary.

					age are probably hollow than would appear to be the case. Trees on ridges and in open forest are of a very inferior quality, but the younger classes are more healthy and vigorous, and of these classes is composed most of the stock of deodár, kail and kokát. The forest is very open on dhárs and on exposed westerly and easterly slopes. There is the usual brushwood with a few ringal in the upper part of the Maráuwa gád.	few.	The blanks to be planted up in 1893.
4	203	Occupies the lowest part of the block below the Paniawa nála and the Missau road. A few chains below the road, the Bari dhár rises up into a peak from which branch off towards the east, north-east and north, a number of diverging spurs alternating with shallow and usually dry watercourses. The portion of the main dhar between this peak and the road is somewhat flat and the easterly slopes are more or less gentle; but become steeper lower down, till along the course of the Paniawa nala and the Maráuwa gád they form precipices. Prevailing aspects north-east and north.	30°—40°, average 40°; but precipitous along sides of nalas and in a few other places near the peak often as low as 20°.	As in compartment 3	The eastern and southern portions, including the slopes surrounding the peak near the Missau road and aggregating 86 acres, consist of open grassy blanks mostly dotted with saplings and poles of kail with a few trees of deodár and moru in the lower and of rai in the higher parts. The stocked areas are (1) the northern portion and (2) a strip along the Paniawa nála and the Maráuwa gád. The first is mainly stocked with saplings and poles of kail together with a very appreciable proportion of moru and bán of all classes with the usual kokát, such as horse-chestnuts, maples, holly, willows, cotoneaster &c., along the nálas. The second is stocked with moru as the predominating species together with kokát, deodár, a few kail, and individual rai as its companions. Rai predominates only over four acres near the head of the Paniawa nála, mixed with some deodár, káil and moru. The oak forest is usually very open especially near blanks, but the kail forest is fairly dense. In the oak forest there is a fair proportion of mature trees which are generally unsound and knotty. In the small patch of rai there are few I. class trees, and the whole of the stocked area is essentially a sapling and pole forest, there being but few mature trees and those chiefly moru and bán. The quality of the younger classes is very fair. Dead ringál abound in the parts under forest.	The greater part of the open blank has a splendid advance growth of káil with a fair proportion of established seedlings of deodar, moru and bán in the northern portion, and of deodar, rai and moru along the Paniawa nála and the Missau road. Near the peak the reproduction of deodar about the parent trees is excellent, and the advance growth adjoining the stock is almost an impenetrable mass of kail seedlings up to 15′ high. In the eastern part near the Paniawa nála seedlings are not sufficiently numerous, but recent ones are coming up and will eventually cover all blanks. A few kail only 8′ high and 10 years old on easterly slopes are beginning to bear cones.	Has never been touched, but will be worked after Kanjátra 3, when most of the large trees growing amongst the advance growth can be taken out. More than a mile of fuel paths will be necessary to bring the fuel to the Deoban-Kanásar road. Cleanings amongst the young kail should be made in 1893, and afterwards at intervals of five years if possible. Blanks to be planted up in 1894.
6	43	Comprises the slopes at the head-waters of the Maráuwa gád above the lower Konain road. The slopes near the main ridge and along the nálas, are in places precipitous. Predominating aspects are northerly, north-westerly and westerly, but some slopes on the left flanks of dhárs face the south-west.	Over 45° along the main ridge and near nálas; elsewhere 30° to 50°, average 35°, but sometimes less than 30°.	Limestone overlaid in a few places with soft crumbling shales. The subsoil is a sandy clay from a few inches to over two feet in depth, but absent on some precipitous ground and sharp dhárs. Bands of stiff clay occupy the peaks along the main ridge. The top soil is a dark, rich, free and moist loam from a half to one foot deep and covered with about half a foot of humus.	Chiefly the two firs, karshu, kokát, moru, and some kail. The firs are the most numerous and are found everywhere, moriada predominating in the higher portions and in moist shady ravines, rai along dhárs and in the lower parts. The highest portion close to Snow View is stocked with karshu and a sprinkling of firs. On westerly and south-westerly slopes karshu, mostly saplings and poles, extends down to the lower Konain road. Moru trees occur in ravines as do also some kokát, bird-cherry, horse-chesnut, maples, &c. There are a few kail saplings and poles here and there. The forest is open on westerly and south-westerly aspects and in the beds of nálas, but is better stocked elsewhere,	There is very good advance growth of karshu along the Kanjátra dhár and on westerly and south-westerly slopes, the seedlings being from 2′ to 10′ high and forming dense patches; recent seedlings are also seen here and there. There is similar advance growth of morinda, but it is patchy and wanting on some northerly slopes. The reproduction of rai is not so good, though in places in	To be worked after Mohna 12. No fuel paths or only a few chains will be required, as all the wood can be brought down to the old Simla road or to the fuel road already in existence. Blanks to be planted up in 1894.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
							although never very dense. Mature trees are not numerous, saplings and poles predominating everywhere. There are some tall, well-grown but usually unsound kurshu in the higher parts, but this species becomes stunted lower down towards the west. The firs in the upper parts are stunted with unhealthy crowns, and are often hollow, but lower down they improve both in size and appearance. Bingals are found everywhere, and there is a heavy herbaceous growth in the rains.	the lower parts there are some patches of advance growth. Recent seedlings of the two firs are, as a rule, wanting.	
Jódi ...	1	203	The compartment, which comprises all the II. class forest north of the Dárna dhár and below the Bodir-Simla road, is traversed by two tributaries of the Sijla gád, so that there are five main slopes facing alternately north-east and south-west. The principal dhárs are rugged with sharp edges, and precipices of limestone rock are frequent.	30°—60°, average 40°...	...	Chiefly a dark massive impure limestone disintegrating easily on exposure to the air, and mixed with a few beds of a crumbling shale in the lower portions of the compartment. The subsoil is a reddish clay three feet deep in places, but wanting in others and mixed with numerous fragments of the underlying rock. The top soil is a sandy loam reaching a depth of half a foot on northern slopes and in ravines. Humus is absent except in some ravines.	Mainly moru and bán, the other component species being rai, box and kokát. There are also a few individual trees of deodár, kail, cypress, ayár and burána, the deodár and cypress being found on the slopes of the dhár leading to the Ogoi peak. Bán predominates on south and south-west aspects and in the lower portions, whilst moru mixed with a large number of young rai occupies the slopes facing the north, north-east and north-west. Box is found along the two nalás and along the Sijla gad, especially along the westerly nalá where a few trees occur above the Simla road in compartment No. 2. The trees are mostly, however, young, the mature ones having been exploited. Along ravines and in shady places are the usual kokat, spindle trees, dogwood, holly, horse-chestnut, willows, laurels and wild pear in addition to rather a large tree called "ratenda by the Jaunsáris. The two southerly slopes save close the nalas as well as a large portion of the right bank of the northernmost of the two feeders are open grassy blanks dotted with trees, chiefly mature ones, of the component species; elsewhere there is usually rather an open forest, the lower portion of the slope from the Darna dhár being the most densely stocked. More than two-thirds of the entire stock consists of saplings and poles. Rai is here at its lowest limit and the trees are small, stunted, branchy and sickly. The oaks are excessively lopped for fodder and look like pollards except the few trees in in-	On the open grassy slopes seedlings are rare, those that exist being browsed by sheep and goats and reduced to mere bushes; elsewhere on northerly slopes in the higher parts rai seedlings are not uncommon up to 10 feet in height mixed with some moru, whilst lower down the advance growth is mainly bán. Numerous box seedlings of all ages occupy the two nálas. On the whole reproduction is unsatisfactory both as regards numbers and quality.	The Bodiár-Simla road runs along the eastern boundary and a bridle path leads from this road to a dilapidated powder magazine on the dhár nearest Jódi. Most of the mature rai and box have already been extracted, and no further fellings of green trees should be made. The lopping rules must be strictly enforced. A chak called Ionds includes all the assessed fields.

						accessible places, which are healthy and possess fine crowns. The undergrowth of indigofera, desmodium, &c., seems to be kept down by the heavy grazing.		
2	97	The compartment lies above the Bodiar Simla road, comprising the upper basins of the Darna nau, of the next tributary of the Sijla gád to the north and the southern half of the upper basin of a third stream It is cut up by numerous small feeders of these streams, the slopes being steep and the spurs sharp-edged. There are three principal aspects *viz.*, south and south-west for the basin of the Darna nau, west for the basin of the next stream, and north for the last slopes facing J di	30° to 45° in the southern half, often precipitous on slopes with a southern expect, as well as on some northerly ones.	...	The limestone is very prominent along dhárs and the sides of nalas. The subsoil is a loose, sandy clay on an average about a foot deep, but absent on steep ridges. The top soil is a rich loam rather shallow except on northern slopes and in ravines, where it is fairly deep and covered with humus.	The portion between the Seli-ki-lani and the D rna dhár is an open grassy blank dotted with a few mature bán along the road, but treeless along the ridges The remainder is stocked chiefly with rai and moru, saplings and poles predominating everywhere, mature trees being found only here and there. The stock is very irregularly distributed, the northern slopes being well stocked, whilst those facing the west and south-west are thinly covered with groups of mature trees up to 50 in number with grassy blanks between them. There are a few box near the road, some young yew below the Ogoi peak and some deodár and cypress on rocky places left of the Khader-ki-nau There is the usual covering of grass and undergrowth with some ringal in the upper portions	Reproduction is almost absent in the deep ravines and on the left slopes of the Darna dhár there are only a few bán seedlings; elsewhere there are a certain number of established seedling of rai and moru from one to ten feet high and some young deodár and cypress near their parent trees, but recent seedlings, save those of moru, are rarely to be found.	Only dry wood should be removed departmentally. The lopping rules must be strictly enforced. There is no assessed cultivation.
3	70	Occupies the part above the Simla road of the left slope of a prominent dhár which branches off from the Ogoi peak, crossing the road at pillar No. 48. The upper part is broken up by rugged precipices of limestone which crops out also in many other places. Aspect south-west.	30°—45°, average 40°	...	As in the preceding compartment. The soil is very shallow and dry, and mixed abundantly with fragments of the underlying rock. There is no humus.	The whole compartment is an open grassy blank dotted with trees of rai, cypress, moru, bán, buráns, kokát and a few others. Above pillar No. 48, rai occurs in groups of from 5 to 15 trees. The soil is immediately covered with grass and a few shrubs of barberry and indigofera.	Practically there is no reproduction, a few straggling seedlings of rai and moru being found on the few minor slopes facing the north-west.	No green trees to be felled departmentally. Lopping rules to be strictly enforced.
4	215	Consists of the basin of the Sukkar nala and of a small stream to the north of pillar No. 48. The dhárs are sharp-edged, the slopes steep and limestone precipices are	45° in the higher portions, elsewhere 25°—35°.	7,400′—9,200′, average 8,300.	A dark limestone interstratified with beds of a crumbling shale in the lower portions to the right of the Sukkar gád. A clayey subsoil cropping out to the surface on the slopes to the right of the Sukkar gád is	The firs constitute by far the greater portion of the stock, there being a considerable proportion of I. and II. class trees. Karshu is found in the highest portions below the Chakrata-Deoban road and occupies more or less westerly and south-westerly aspects, whilst a sprinkling of moru is met with along the Sukkar gád and on its left slopes; these two oaks occur chiefly as saplings	In the lower parts on the least rocky places there are seedlings in scattered groups of rai and deodár with a little kail, from 3′ to 12′ high, and higher up on northerly slopes there are similar groups of young rai and mo-	Mature rai for timber have already been felled and although some more trees can be cut, the compartment being open to grazing, it is not proposed to make any more fellings un-

Description of Compartments—(continued

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
			common especially in the upper half. Aspect very variable, usually more or less northerly on the left of the gád, westerly and south-westerly on the right.			overlaid with a free loam about a foot deep on northern slopes, where there is also half a foot of humus which is absent on southerly slopes.	and poles, there being very few mature trees. A few saplings and poles of deodár are found in the lower portions, a few young kail, bán, syár and burárs on south-western slopes to the right of the gád, a few young cypress on precipices, kokát along nálas and some yew on the highest points. The greater part of the right bank of the gád is an open grassy blank dotted with saplings and poles and a few mature trees, whilst the southern slope near pillar 48 is quite bare. In the rest of the compartment the stock is fairly dense on northern slopes, but very open on south-westerly and westerly ones. The oaks have been much lopped, even the youngest trees. The young firs are very vigorous, but mature trees, though tall, straight and sound, are very branchy. The undergrowth consists of ferns, desmodium, indigofera, accompanied on northerly aspects by willows, daphne, strobilanthes, &c., withgrass in open places.	rinda. The reproduction of karshu is better, there being pretty many seedlings from 1′ to 10′ high which have however been much damaged by grazing. Recent seedlings are usually absent especially in the higher portions facing north. Young ringal are very abundant below the Ogoi and Jarsa peaks.	less to meet some departmental requirements. There is a chak called Syáru.
	5	70	Occupies the left bank of the Gusarghári nála. The ground is usually very steep and in the upper portions precipitous, limestone precipices being common. There are only a few moderate slopes, as along the nála and in places near the Simla road. General aspect north-westerly; near the Deoban road the slopes face west and sometimes south-west.	35°—45°, average 40°, going down to 30° in places along the nála and the Simla road.	...	As in the preceding compartment; crumbling shales are found near pillar, No. 54.	Very similar to the stocked portions of compartment 4, consisting mainly of firs and oaks, the number of other species—deodár, kail, yew and kokát, being insignificant. Karshu occupies the highest portions about 15 chains below the Deoban road, after which firs predominate, individual morn occurring here and there. Spruce is the principal tree over the greater part of the area, morinda being mixed with it on the higher and colder slopes. The proportion of mature trees is very small, about three-fourths of the whole stock consisting of saplings and poles. There are no open or grassy blanks, and the forest is usually fairly well stocked, although it is much too open in places.	The reproduction of firs is similar to that in compartment 4, but that of karshu is much better, the advanced growth being dense but somewhat patchy, consisting of seedlings of all sizes and ages.	It is only proposed to work the small area stocked with karshu, and this should be done after Mohna 9. A short fuel path joining on to the sledge road will be required. The outer boundary has been changed to exclude some fields.
	6	72	Occupies the bank of the Gusarghári nála and the basin of a small tributary of the	In higher parts above 45°, some rocks forming sheer walls; elsewhere 30°—60°, aver-	...	As in compartment 4 There is a rich humus of oak leaves about half a foot deep in the portions just	Only about one-third of the area is covered with forest, the remainder consisting of open grassy blanks dotted with saplings and poles of rai and kail along ridges but with no tree-growth else-	The reproduction of karshu is very good and consists mostly of advanced growth three to ten feet and over	Ditto.

			Biniani gád. The portions along the spur are broken up by bare precipitous limestone rocks which are also prominent along the Deoban road and on two peaks above the nála. Prevailing aspects are west and south-west.	age 40°, but there are some gentle slopes near the nála.		below the Deoban road.	where. The highest portions are covered with a fine sapling and pole forest of karshu extending 15 chains below the Deoban road, after which there is a forest of young rai. A similar stock of rai with a few deodár and moru occupies a small north-westerly slope above pillar No 50. Mature trees form a small proportion of the stock and are mostly represented by firs, large karshu being found only on the flat peaks near Deoban bungalow. The kokát are chiefly viburnum and euonymus. In the stocked portion the oak forest is the densest, the firs forming a very open forest in the lower part. The quality of the trees is indifferent.	in height; established seedlings of rai also are pretty general, but they look stunted and unhealthy, becoming more or less bush-like in the lower portions. There are very few seedlings in the open grassy blanks.	
Jádi	..	7	97	Consists of that portion of the left bank of the Biniáni gád below the Tons-Chakrata road. Precipices are rare excepts along nálas whilst some of the small dhárs end abruptly The portion immediately below the Tons road is cut up by a succession of small dhárs and nálas. Main aspects north and north-west. with some minor more or less southerly aspects near the Tons road.	25°—35° in places near the Tons road and also towards the south, elsewhere 35°—45°, rising to 60° in places; average 40°	...	The usual Deoban limestone mixed in places as near Kánjatra lani with ferruginous clay slates A substratum of a stiff clay varying in depth from 1′ to 3′ and out cropping along the Tons road and on some ridges underlies a rich, moist, and free loam about a foot deep, itself covered by a rich humus 3″ to 1′ deep except near Kanjatra leni and the Mari gad where the crop is poor.	The stock is almost entirely composed of rai, morinda and karshu. The firs are found throughout the compartment, but become rare in the higher portions where karshu predominates, the species being most prominent on more or less southerly aspects. Kokat represented by viburnum, euonymus, holly, maple and prunus Padus occurs mainly in ravines and shady places. Mature firs are found on the higher portions facing north, whilst old karshu occupy the flat tops of ridges and gentle slopes. Two-thirds of the oaks are, however, saplings and poles. A narrow belt along the Biniáni gád, the beds of nálas and some small patches near Kanjátra lani are grassy blanks.	Advance growth of rai represented by seedlings from one to ten feet high exists in the lower parts and also along the gád, but it is rare higher up in the denser forest where the established seedlings are mainly morinda In the portions between Deoban and Kanjatra lani there is a splendid advance growth of karshu, the seedlings being of all ages and of good quality; ringal seedlings from 1′ to 2′ high also abound below the oaks.	A sample plot for measuring the growth of karshu is situated in this compartment and measurements should be made every year in the spring. The karshu portion should be worked with the similar parts of the two preceding compartments.
		8	55	That portion of the right bank of the Biniani gad below the Tons road within forest limits, occupying the southern slopes of the main Deoban spur. The ground is very rugged, the dhárs often ending abruptly in sheer walls, whilst huge limestone rocks crop out here and there all over compartment. Main aspect southerly.	30°—46° and over	...	The usual limestone interstratified with beds of a crumbling bluish shale along the lower course of the Biniani gad whilst blue and yellow clay slates rest on the limestone near the Odna peak There is a subsoil of stiff clay on the peaks, becoming sandy on many of the ridges and absent in rocky places.	With the exception of a small portion near the Kanjátra lani and along the main spur, the whole area is an open and mostly grassy blank dotted with a few saplings and poles of karshu, rai and deodár The higher portion mentioned is stocked with an open crop of karshu saplings and poles together with a sprinkling of small rai on north-westerly aspects, in groups interrupted by grassy blanks. The number of mature trees is very small, and these, as a rule, are stunted, much branched and only fit for fuel The karshu have been excessively lopped The soil is immediately covered with grass with a few shrubs.	A very good advance growth of karshu with a little rai is found all over the stocked parts, but seedlings are entirely absent, in the grassy blanks. Recent seedlings of karshu are to be met with, but those of rai are very rare; there is also an occasional young deodar.	Lopping of karshu is very heavy and must be checked The outer boundary has been changed and a considerable area of grazing ground with some fields made over to the Jádi villagers. No green trees to be felled.
		9	58	Consists of two pieces above the Tons roads, the larger part beyond the Deobán bungalow	Tops of peaks rounded with gradients of 10°—20°, slopes from 30°—45°, but usually over	3331′	The Deoban limestone interstratified with beds of shale with a stiff clay sub-soil on peaks but generally sandy	The portion beyond the bungalow is mainly stocked with karshu, the proportion of other species being very small and these mainly firs. There are next to no blanks and all the slopes	There is splendid advance growth of karshu forming dense thickets on the western and south-western	The only closed compartment in the Jadi block Fellings for fuel to take place in 1889. A small

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock	Reproduction.	Treatment.
			from the main ridge to the road and the other below the bungalow as far as Járna láni. The ground is usually rugged and precipitous especially in the part below Deoban, whilst there are some moderate slopes near Kanjátralani. Main aspect westerly	40° in the portion near Járna-láni.		and loose elsewhere wanting on rocks. Humus often from 3" to 6" deep.	are covered with trees of every age and size from saplings o trees past their maturity. The latter are mostly congregated on the flat tops of peaks, whilst the younger classes abound on westerly and south-westerly aspects. The mature karshu are tall, straight and possess clean boles, but the firs are rather stunted and diseased. Up to about 15 chains from Jarna-láni towards Deobán the two firs predominate, rai being the more numerous of the two, consisting of saplings, poles and a fair proportion of mature trees. Further on karshu predominates, but there is a sprinkling of firs throughout and morinda is found on the highest peak. The stock is often very open and does not thrive owing to the lack of soil. There is the usual undergrowth, ringals being abundant.	slopes beyond the bungalow, but it is rare on northerly aspects and absent in nalas. Recent seedlings are common and there is a dense crop of young ringal. In the Járna láni portion there is advance growth of karshu throughout the parts stocked with that species, but it is rather patchy. Individual rai and morinda seedlings also occur but rarely.	area of 1½ acres has already been coppiced, and a further area of about 12 acres will have to be selected and marked off for coppicing after Hajáwa 8 has been finished. No roads will probably be required for working this compartment.
Dárna ...	1	213	Contains the whole of the basin of the Dárna nau below the Simla-Bodiar road. The sides of nálas are precipitous and elsewhere the ground is steep; rocks frequently outcrop throughout the compartment. Aspects south and south-west on the right bank of the stream, elsewhere usually north, north east and north-west.	30° to 45°, precipitous near streams.	...	The rock is a dark, massive impure limestone interstratified in the lower portion with beds of shale. Clay slates of a yellow color overly the limestone on the Gobras-ki-dhár. The subsoil is a loose clay very abundant in the higher portions and in places more than three feet deep, being covered, save on ridges, by about a foot of rich, dark loam which is however only superficial on grassy slopes facing south. A thin but rich layer of humus from oak leaves is found in the stocked portions.	The oaks—moru and ban—form the principal portion of the stock, the former predominating on the higher slopes with more or less northerly aspects, the latter occupying the dry southerly aspects and the lower ravines. In the nalas and along the Sijla gád they are associated with holly, horse-chestnut, maples, laurels, cornus meliosma, pyrus and other kokát, while higher up buráns and ayár are their only companions. A few box are found along the Dárna nau from its junction with the Sijla gád up to a distance of about ten chains. The compartment is pretty well stocked on northerly slopes, but elsewhere the forest is very open and the left flank of the Dárna dhar is an open blank dotted with mature bán trees. Oak saplings and poles are healthy and mostly sound as are mature bán in the ravines and in the lower portions, being also tall and straight, but on southern slopes they are branchy and generally hollow. Mature moru are as a rule unsound and few in number. Undergrowth as in compartment 2.	The portion to the left of the Dárna nau contains a fair advanced growth of moru, ban, ayar and buráns, some of the seedlings being over 3 feet high, but recent seedlings are few. Along ridges and to the right of the nau reproduction is very poor, being represented by some few groups of 10 to 30 seedlings here and there. There are a few box seedlings coming up amongst the loose boulders. Excessive grazing has much checked reproduction.	From pillar 11 to the Darna dhar the Chakráta-Simla road forms the eastern boundary and a fuel path now out of repair runs along the Gobras-ki-dhár from pillar 15 to compartment 3. Another mile of fuel road will be required to work the compartment. To be worked after Legúna 6, but it is probable that this will not be until after the end of this plan. No trees should be cut on the southern slopes of the Dárna dhár and on similar slopes of other dhárs, but the fellings of bán to be restricted to the lower portions, and of moru to the northerly slopes. Lopping rules to be more strictly enforced.

								Three small chaks, Darna I, II and III, have been formed, including all assessed cultivation as well as a fourth chak kawai in exchange for some fields in kanjátra.
2	105	Included between compartment 1 and a small nála rising from near pillar 28, containing the basins of two small tributaries of the Seli gád and the right half of the basin of a third stream. The nálas are deep with steep sides, whilst moderate slopes prevail near the main ridge. General aspect northerly; minor aspects north-east and north-west.	25° to 45°, average 40°;	...	As in compartment 1.	A bán oak forest mixed with about an equal number of burána and ayár, some moru being found near pillar 21. About two-thirds of the whole stock is composed of saplings and poles. The kokát consists of the same species as in compartment 1 and, as usual, is confined to the nálas. Mature trees are most numerous on north-westerly and north-easterly aspects, where as usual, the stock is more open, but they are branchy and knotty, whereas elsewhere they are tall, straight and sound. More than a third of the compartment is occupied by open grassy blanks below Gobras-ki-dhár and along some of the slopes facing north-east. Undergrowth of grass on southern slopes, elsewhere the usual brushwood of indigofera, desmodium, &c., with a few clumps of the small ringál.	In the lower parts bán seedlings of all ages are to be found as well as on all shady, northern slopes; elsewhere the reproduction is poor, but some seedlings are filling up the grassy blanks, young burána and ayár being numerous on dhars. Established seedlings of bán are much damaged by grazing.	There is a fuel road along the Gobras-ki-dhár. About half a mile of new fuel roads will be required, if it be found necessary to work the compartment within the next 20 years which is not probable. Fellings should take place after Dárna I, and be confined to the lower portion of the compartment.
3	150	Contains that portion of the left bank of the Amtiar gád included between two nálas rising respectively from pillar 28 and 31. With the exception of the higher parts and the eastern boundary the compartment is full of rugged precipitous limestone rocks, often forming sheer walls. Very variable, but general aspect north.	Along the main ridge and eastern boundary 25° to 35°, average 30°; elsewhere usually over 45°; frequently precipitous.	7,071′ to	Ditto.	The stock consists of bán, moru, ayár, burána, box and kokat. The last, though exceeding in numbers any other single species, are found only in ravines and consist chiefly of saplings and poles of boxwood, laurels, wild pear, &c. Box occupies the lower bed of the nala which forms the western boundary of the compartment and ascends the hollow formed by the main feeder of this stream, but only saplings and poles occur, the mature trees having been exploited. Ban occurs everywhere mixed in the higher parts with ayár and burána. Mature trees, as a rule, occupy the western slopes and precipices, while northern slopes contain a greater proportion of saplings and poles. Nearly one-fifth of the stock consists of I and II. class trees. A large grassy blank along the main ridge and the eastern boundary occupies about one-third of the compartment. The forest is generally rather open, being densest in ravines. In the upper part the trees have been excessively lopped including even burána. On south-western and western slopes the old trees are crooked and much branched more than a third being unsound. Undergrowth as before, but ringals more abundant.	Almost entirely absent in the upper portions, a few seedlings only to be found of bán, burána and ayár, the first much browsed by grazing animals. Somewhat better towards the west, and in the precipitous portions where sheep and goats do not go there are ban seedlings of all ages and in a thriving state. Box seedlings are numerous near the parent trees.	The fuel road that follows the main ridge just stops at the beginning of this compartment. About ¾ of a mile of new fuel road will be required, and fellings should take place after Dárna 3 has been worked over, but will not perhaps be required during the next 20 years. They should be confined to the lower portions of the compartment. A chak containing all the assessed cultivation, called Gobras, has been formed near the main ridge.
4	259		...	...	...	Not valued or described, being too poorly stocked to be worked.	...	To be kept as a grazing ground.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Matkángra ...	1	159	Occupies the head-waters of the Horo-ki-nála and some slopes to the east as far as the Matkángra nála, the whole being above the Bodiár road. The entire compartment is cut up by numerous sharp-edged dhárs and the portions below the Jindi dhár are very precipitous, as they are here and there elsewhere. Owing to the numerous dhárs all aspects are represented, the predominating ones south, south-east, south-west, west and east, the compartment on the whole facing south.	Average 45° in higher parts; elsewhere, omitting precipices, 35°—45°, and only 30°—35° on some grassy slopes facing east.	...	A massive blue crystalline limestone prevails throughout and crops out prominently in the higher portions and along nálas. Towards the Seli-lání a light-yellow clayey shale overlies the rock, but it is not continuous. The subsoil is usually a sandy clay very deep in places but altogether wanting along watershed line. It is covered with a rich sandy and very shallow loam, deepest in ravines.	About two-thirds of the compartment is an open grassy blank, being either altogether devoid of trees, as for instance the portion near Seli-lání and that along the main ridge, or only dotted with a few mature moru, bán, rai, lauri, &c., The stocked portions which contain mainly mature trees, the forest being a very open one of moru and kokát with a few rai, bán, ayár and burráns except in nálas, where some saplings and poles also occur; are (1) the lower portion of the slope on the right of the Matkángra nála and (2) a small strip along the road in the Horo-ki-nál. About one-third of the I and II class trees are unsound, those on rocks and grassy slopes being hollow and dwarfed, good well-grown trees being only found near nálas. The ground is immediately covered by a dense growth of grass and ferns on blanks, and of grass mixed with desmodium, indigofera, barberry, brambles and myrsine in ravines and nálas under stock.	There are no seedlings in the higher and in the western portions, elsewhere in open grassy blanks recent moru seedlings are found just under the parent trees often growing very thickly together, and patches of moru seedlings from 3 to 8 feet high are to be met with in the stocked areas.	The I and II class trees being, as a rule, found in the open grassy slopes should be kept as seed-bearers, and the few trees which can be taken out should only be felled after those in compartments 3, 2 and 5 have been worked out, but it is not probable that they will be required during the next 20 years. The blocks should be planted up in the three years 1897-99, at the rate of about 22 acres a year. Morn, bán and kail should be used with cypress in the rocky part. The outer boundary has been altered near Seli-lání *vide* Appendix F.
...	2	150	Occupies the right bank of the Amláwa gád and its continuation the Seli-ki-nau as far north as the Jádi road. Several prominent dhárs with deep precipitous ravines between, divide it into small basins with slopes facing west, south-west, south-east and east. A few minor slopes face the north-west near the outer forest boundary; the sides of the nálas are often formed of bare walls of limestone rock.	From 35°—45° to precipitous.	...	As in compartment 1. In the lower portions a hard reddish shale is found interstratified with the limestone and crops out on the ridges.	The slope on the right of the Biti gád as far as a few chains below the junction of the Seli-ki-nau and Horo-ki-nal, that along the boundary line from pillar 9 to 11 and the dhár running down from the former pillar are open grassy slopes. This is also the case with portions on the right bank of the Seli-ki-nau and along the Jádi road as far as the Horo-ki-nal, but here they are dotted with mature moru and bán. The remainder is stocked with a mixture of moru, and bán, ayár, burráns and kokát, saplings and poles predominating, whilst mature trees are mainly found on dry slopes with a more or less southerly aspect. The kokát are found in moist shady ravines and consist of horse-chestnut, poplar, laurels, euonymus, cornus, &c. There are a few box saplings and poles along the Biti gád and Matkángra nála. There are few portions much more than half stocked and the forest is often very open. The mature trees at unfavorable aspects are as a rule hollow and knotty,	Advanced growth of the component species is found throughout, but that of bán is very rare on dry open slopes. Recent seedlings are also coming up, young moru being the most common, but box seedlings are wanting. There are but few seedlings of any species in the open grassy blocks.	After Matkángra 3 has been worked over, selection fellings must be continued here for the Military Works supply, and they should be confined chiefly to the nálas and to slopes with northerly and north-westerly aspects, all unsound trees of whatever size being removed where such are found in fairly dense forest. Fuel paths will be necessary in the Bagh-ka-kobra and the Horo-ki-nal and the inspection path along the right bank of the Bitigád can be widened

						whilst those on more or less northerly slopes are usually sound and often possess long clean boles. The saplings and poles are healthier and more vigorous. Undershrubs, &c., as in compartment 1		and made fit for mule traffic. The blanks suitable for planting, about 37 acres, should be taken in hand in 1900 and 1901, the same species being used as in Matkangra 1, moru being sown along the Jádi road, bán on the right of the Biti gád The small blanks along the bed of the Biti gád and its feeders can also be filled up with box transplants The outer boundary has been changed as per Appendix F.
Matkángra	3	192	Consists of the left bank of the Amláwa gád and its continuation the Seli-ki-nau from the forest boundary up to the Jádi road. The two most prominent dhárs are those on which the fuel-shed and the lime-kilns are situated The Biti gád and its main feeder, the Seli nau are lined by almost sheer walls of limestone; elsewhere save on the rugged rocky slope south of the lime-kiln dhár, the slopes are usually moderate and fairly even. The aspect varies from south, south-west and south-east to west and north-west.	30°—40° up to 45° near pillar 36, and below the lime-kilns; precipitous along the nálas.	...	Limestone interstratified in the lower parts with beds of a friable shale which abounds along ridges. The sub-soil is a sandy yellowish clay mixed with fragments of the underlying rocks, and on an average is about two feet deep, being covered with a dark loam very shallow and dry on southern slopes, but deep and rich in the stocked areas facing north where there is likewise a thin layer of humus.	A narrow strip of land along the nála from pillar 34 to 35 contains mature trees of bán, ayár and burán the upper portion of the slope being an open grassy blank dotted with large trees of the above species. On the other slope of the Karbir dhár the stock consists mainly of saplings and poles of the same species, mature trees being found only here and there, but becoming more common near pillar 36 The southern slope of the lime-kiln dhár is dotted with some mature bán, but on the northern side there is a pretty dense forest of the three species already mentioned with moru in addition, mainly saplings and poles, mature trees being rare; a similar forest extends up to the Seli-ki-nau. The kokát consist of the same species and occur in the same localities as in compartment 2, near which are a few box. Moru predominates on northerly, bán &c., on southerly aspects. The stock at favorable aspects is of a pretty good quality, but lorsanthus is common on bán. Undershrubs as in preceding compartments; the small ringal occurs everywhere.	There are scarcely any seedlings on the southern slope below the lime-kiln and on similar slopes elsewhere advanced growth of bán, ayár and burán occur here and there, the ayar seedlings being in patches, recent seedlings of all species being rare On the right slope of the Karbir dhár the advance growth of bán, &c, is very good except where the forest is too dense and recent seedlings are also numerous Elsewhere moru seedlings of all ages abound, but occur in patches forming sometimes dense thickets.	Selection fellings for supplying the Military Works with fuel and charcoal for their lime and brick-kilns should first be made here, but no trees should be cut on the southerly slopes below the forest chauki and the lime-kilns. About 40 acres of open blank in the areas closed to grazing should be sown up in the years 1902 and 1903 with bán. Fuel paths will be required to work the portions on the left bank of the Seli-ki-nau.
	4	135	Occupies a narrow belt of land between the Chakráta-Jádi and the Chakráta-Deobán roads being bounded on the west by the former road as far as the Matkángra nála, following that nála to the Ogoi tiba, and on the east by a prominent spur from Járna tiba which meets the Deobán road along which the boundary runs to Morrow's Neck. Near Járna tiba the ground is very broken	Omitting precipices 30°—40°, average 36° from Morrow's Neck to Gonakai, but steeper above, exceeding 45° in places, though only 30° in the beds of nálas.	...	The underlying rock is limestone pierced in places by a black quartzite and infolding here and there beds of soft, yellow and crumbling clay—slates. The rock above Gonakai is more impure and more easily disintegrated than that lower-down. The sub-soil is a free sandy clay much developed on dhárs, but absent on precipitous places It is profusely mixed with fragments of limestone. The top soil is a dark free loam very deep and rich in ra-	35 acres from the Ogoi tiba to some chains below the Mori tách is an open rocky and grassy blank without any tree-growth The slope above Gonakai is only dotted with old bán and this is also the case on some short southern slopes near the chauki. The western and north-western slopes from the chauki to dhár leading down to the lime-kilns contains mature bán and burán in groups in more or less sheltered localities. Beyond the stock is somewhat more regular, moru occurring in great numbers whilst bán is confined to slopes facing the south, south-west and west. Bán becomes scarce above Gonakai, moru predominating. The ravines contain such kokat as holly, maples, laurels, cotoneaster and cornus capitata. It will thus be observed that the stock is very irregular. It is also of very	There are moru seedlings of every age and size, but they are not uniformly distributed existing only near parent trees. Seedlings of bán, burán and ayár are also met with, but are by no means numerous and are generally scattered on more or less southerly slopes in the lower part.	Much grazed over by bullocks belonging to food-carrying contractors and also by the fuel-carrying mules, and there are two encamping-grounds, one at Gonakai the other at Mori tách. On this account and also because it has been rather overworked in the past to supply fuel for the lime-kilns, it should be given complete rest and only dry wood extracted, as well as fa-

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration or aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
			and rugged with prominent limestone rocks and sharp-edged dhârs; elsewhere the slopes are more even, although rocks crop out in places along both roads. The aspects are very variable, the most common being south and south-west from Jârna tiba to Gonakai, and west, north-west and south from Gonakai to Morrow's Neck.			vines and under forest, but shallow and rather dry in the open. Humus is wanting except for a thin coat on stocked northern slopes	poor quality, but about one-third of the trees are mature, many of these being hollow and flat-crowned. The forest where it exists is usually extremely open on more or less southerly slopes and is only fairly dense in ravines. There is a dense growth of indigofera, desmodium, brambles, barberry, sarcococca, ferns and herbs in ravines facing the north and north-west, and grass on southern slopes. Ringals are rare.		fagot wood from the various shrubs.
Matkángra ...	5	60	Comprises the slopes to the right of the Chakráta-Deoban road as far as a spur running down from Jârna tiba to Kotyura tiba, and thence to pillar No 34 at Morrow's Neck. The road meeting this ridge at Gonakai divides it into two portions. The higher portions contain some large precipices. Prevailing aspects from Morrow's Neck to the dhâr leading to the limekilns are south-west and changing thence to above Gonakai to west, north-west and north The blank near Moru tách faces south and south-west.	Very steep along main spur from Moru tách to about 30 chains above Gonakai, being usually above 40°, elsewhere from 30°-45° with a few precipitous places below Gonakai.	...	As in the preceding compartment.	From Morrow's Neck to the dhâr leading to the limekilns the stock consists chiefly of mature bán, bursns and ayár existing in small groups in sheltered places with numerous small grassy blanks between them Beyond this to Gonakai there is a better but open crop principally of moru with burâns lower down on westerly slopes and a sprinkling of rai as the aspect becomes north-westerly and northerly. There are a good number of I and II class trees in this portion especially just below the Kotyura peak extending down to the road From Gonakai to the blank near Mori tách moru predominates mixed with a small proportion of bán on southern slopes and of rai on northern ones. There is the usual kokat holly, euonymus, sp , &c , in ravines and other moist places The portion along the main spur for a breadth of one to three chains from pillars 34 to 31, from pillar 27 to about 20 chains up the spur and a larger area below Mori tach are open grassy blanks The first two pieces contain, however, just a few bán trees. The ground is covered with grass on more or less southerly aspects, and with brambles, barberry, laurels, indigofera, desmodium, &c , on more or less northerly ones. There are a few ringal below Kotyura tiba.	There are no seedlings in the lowest portion, but from about 15 chains from Morrow's Neck, a few large seedlings of bán, ayar, and burâns occur at intervals. Below Kotyura tiba there are some dense patches of splendid advance growth of moru as well as recent seedlings above Gonakai Reproduction is poor on southerly aspects but better on westerly and northerly ones.	Closed to grazing and traversed by the new water-canal. It may be worked for fuel for the Military Works after Matkángra 2, and it is hoped ere then more seedlings will have come up At present only about 50 I and II class trees could be taken out, mostly from the portions below Kotyura tiba and that above Gonakai A short fuel path will be required from Gonakai to the Kotyura tiba. The small blanks above Gonakai and that near the sledge road can be sown up with moru in 1903.
Mohna ...	1	45	Occupies the slopes from the ridge between Gonakai and Kotyura tiba	45° along nálas and in the higher parts, 30° to 40° in the lower por-	...	Limestone, much developed near the Kotyura peak. The subsoil is a sandy clay	An oak forest, the species being moru, bán, ayár, burâns and kokât with a small sprinkling of rai. The forest is fairly dense on northerly slopes	There is a very good advance growth, both scattered and in patches and recent seed-	Now being worked for fuel and if not finished more trees can removed

			down to the outer boundary. Small precipices occur in the upper portion and two conspicuous minor spurs and three or four dry water courses with steep sides cut it up into slopes facing the north-west and north east General aspect more or less northerly.	tions, average 35.°		cropping out along the dhárs, but over large areas the soil is a free, dark, rich and fairly deep loam. There is a quantity of humus in the lower part.	and along nálas and open along dhárs and at north-easterly aspects, but there are no blanks. All diameter classes are well represented, but the number of I class trees is not large and consists chiefly of the two oaks, most of the moru being unsound. The dhárs are covered with grass and ferns and there is the usual brushwood along the nálas as well as some ringal in the upper part of their beds.	lings of this species are also common, but reproduction of bán, ayár and burána is insufficient, established seedlings being only found along dhárs and in open places here and there.	in 1889.
Mohna ..	2	250	Occupies the slopes above the Mohna road up to the main ridge, from the prominent dhár running down from Járna tiba to Gonakai to the Bhutkila dhár It is broken up by a succession of sharp-edged and rugged dhars and the portion below Chakráta view is very rocky and precipitous whilst smaller precipices crop out here and there all over the compartment. The predominating aspect is southerly with modifications to the south-west and south-east, whilst some small slopes just above Gonakai face the east and north-east.	35° to 45° and over, being sometimes as low as 30° along the beds of shallow nálas, average 40°.	..	Limestone with a few shales in the eastern portions. The subsoil where it exists is clay cropping out along dhárs and profusely mixed with fragments of rock. The top soil is a free dry loam wanting on precipitous ground, shallow on steep slopes and up to three feet deep along nálas There is no humus.	With the exception of a few small patches aggregating 12 acres poorly stocked with moru, bán, rai and kokát, the whole compartment consists of grassy and often rocky blanks dotted with a few mature rai in the upper and western part and with a few oak in the eastern portion. There is the usual covering of grass in the open with some bushes of brambles, spiræa &c., along the ravines. Cotoneaster microphylla covers many of the rocks.	Almost nil, there being just a few oak seedlings in the stocked patches and still fewer young rai, oak and kail in the blanks near mature trees.	The stocked area is too small and the stock too scanty to render any fellings advisable.
	3	150	Occupies the whole of the basin of the Khadanáwa gád lying within forest limits below the Mohna road. A succession of sharp-edged dhárs generally with steep slopes runs through its whole length and bare steep rocks crop out here and there, forming precipices in the northern half. The aspects are very variable, the most common being south easterly, southerly, easterly, northerly, north-westerly and north-easterly.	Excluding precipices 45° in the northern half, but towards Kandia láni 30°—45° average 40°.	..	Limestone and shales. The subsoil is a sandy clay wanting on steep places but fairly deep on moderate slopes and along nálas. The top soil is a rich loam very shallow in the blanks and from a half to one foot deep in the stocked areas. Humus is met with only along nálas where the leaf canopy is not very open, but the quantity is always small.	Nearly half the compartment (72 acres) at south-eerly, south-easterly and in some places easterly aspects are grassy and rocky blanks dotted with solitary, bán, moru, ayár and burans from the Kandia-láni to the Rangai khud and quite bare of trees to the east of the khud; of this area 22 acres may be classed as unproductive. The rest of the compartment is an oak forest the species being moru, bán, ayár, burána and the usual kokat, bán, ayár and burána being mostly met with along dhárs, moru and kokát along nálas and in other moist places A few rai are sprinkled over the northerly and north-westerly slopes adjoining the Kandia láni and a small number of cypress occupy some of the precipices. The density is very variable, being often excessively open along dhars and fairly dense only along nálas. There is a fair proportion of mature trees, chiefly moru and bán, but as a rule most of them are hollow and knotty and difficult to split, though there are also some fine tall trees. There is the usual growth of grass and undershrubs.	Not good. There are straggling seedlings, from 3 to 10 feet high of all the component species in or near the stocked areas but over most of the blanks there are very few and frequently no seedlings; a few established young rai and kail are to be found on northerly and north-westerly slopes. Recent seedlings are always rare.	To be worked for fuel after Hajawa 7, but as it is open to grazing great caution should be exercised and trees should be felled only over well-established advance growth. The compartment has never been tapped before and nearly one and a half miles of fuel path will be required.

Description of Compartments—(continued).

Name of block.	Number of compartments.	Area in acres.	Configuration and aspect.	Gradient	Altitude	Rock and soil.	Stock.	Reproduction.	Treatment.
	4	103	Occupies the upper portion of the block above a broad road which leaving the Tons road just below the Deoban bungalow meets it again at Kaunti lani The slopes are usually moderate and even, and there are no precipices of any moment, though there are a few rocky walls and some steep slopes. Aspect very variable, but most commonly easterly and north-easterly.	30°,—45° but near peaks such as Snow View 15° —30° only	.	Limestone mixed in places as near Snow View with soft and bluish clay slates belonging to the Mundla series, and caught up in the folds of the limestone The subsoil is a sandy clay much developed on the tops of peaks and flat portions of dhárs and varying in depth from one to three feet. The top soil is a free, dark and rich loam from a half to two feet deep and covered except in open places with a rich and often pretty deep humus of decayed oak leaves.	A karshu forests almost pure on south-easterly and southerly slopes but mixed with some firs on northerly and north-westerly ones, whilst the firs predominate over 10 acres near Kaunti lani. The forest is dense at south-easterly and easterly aspects amongst the saplings and poles, but open on northerly and north-westerly slopes, and in many of the parts where fellings have taken place. There is a small blank near Snow View formerly a cholera camp and similar blanks along the lower road The stock is composed mostly of saplings. poles and young trees and the number of I class trees is small, these occurring chiefly on the flat tops of ridges and peaks and at north-westerly and westerly aspects. The quality of all classes is fairly good. There is a rank growth of strobilanthes and other herbs during the rains and an undergrowth of brambles, &c , whilst ringals are plentiful nearly everywhere	Dense patches of karshu advance growth are found on westerly, southerly and south-easterly slopes and in places also on easterly ones, and individual established seedlings are also met with here and there on northerly and north-easterly slopes but in the lower parts of such slopes there are mostly groups of young firs There are also recent seedlings of karshu, but they are very few in number on northerly slopes In the north part advance growth of morinda with a few large rai seedlings is common.	The whole area will be worked out this season, and during the next 20 years only dry fuel should be extracted.
	5	45	Occupies the upper portion of the block between the Kua khud and the Bhutkila dhar as far down as a spur of that dhár from the precipice to the Kua khud It contains a number of steep dhárs which are precipitous in places. Predominating aspect north-easterly.	30°—45°, average 35°, and in a few places as low as 25°.	...	Limestone prevails everywhere. The subsoil is a sandy clay fairly deep on most slopes but wanting on precipitous ground, and the top soil is a free, dark, rich loam from a half to two feet deep, and is covered with about half a foot of humus.	A karshu forest nearly pure at easterly and south-easterly aspects, and mixed on northerly and north-easterly slopes with rai and morindas, the latter being nearly pure in small patches on northerly slopes There are also a few morn along the Kua khud The density is very variable, and is occasionally pretty big, there is a small coppice of about 1½ acres near Bhutkila dhár and a small blank close by The stock consists mainly of saplings and poles and mature trees are few. The stock is vigorous except that the rai trees in the higher portions are stunted and somewhat diseased There is dense and luxurant growth of strobilanthes and other herbs during the rains and a thick undergrowth of brambles, indigofera, desmodium skimmia, daphne, willows, honeysuckles &c., with ringals everywhere	A very good advance growth of karshu with seedlings from 1' to 8' high is found on easterly and south-easterly slopes, individual seedlings being also met with at north-easterly aspects, where and also at northerly aspects there is similar advance growth of morinda in patches Rai advance growth is rather poor and is met with only in the lower parts where there are also some young moru Recent seedlings of all kinds are pretty common except where the stock is dense, though not in sufficient numbers.	The whole was worked over about 14 years ago, and should be gone over again after Mohna 6. The small area on the left flank of the Bhutkila dhár should be planted up with karshu in 1895.
	6	55	Occupies the remainder of the slopes on the right bank of the Kua khud from compartment 5 down to the Mohna road The slopes are moderate and	20°—35, in the eastern portion 35°—45° in the western part and along the Kua khud.	...	Limestone mixed with clay slates along the Mohna road. A rich, fairly deep loam forms the topsoil on the higher portions and along the Kua khud, but bands of clay crop out all	There are 20 acres adjoining compartment 5 stocked mostly with the two firs, morinda predominating, mixed with moru and kokat along the khud and with karshu in the highest parts Lower down along the Kua khud there are six acres of moru and bán with a sprinkling of rai and kokát and a few kail along the dhár The	A large portion of the open blanks is without any reproduction except a few individual seedlings of kail, moru and bán, but where the blanks are dotted with mature trees numerous heal-	Has already been worked, but should be gone over again after Mohna 7 The grassy blanks should be planted up with kail, deodár and moru in 1895.

		fairly even except for a few small precipices along the Kua khud and the western boundary General aspect north-easterly.			over the eastern blank portion and are very thick in places. There is a fair quantity of humus in the higher moist slopes.	remaining 29 acres consist of grassy blanks without any tree-growth along the main dhár, but dotted with mature moru and bán just above the Mohna road and with moru and rai in the middle portion The fir forest is fairly dense especially on slopes but the oak forest is open There is a fine growth of karshu and morinda saplings and poles near compartment 5, but the number of mature trees is very small and they are mostly moru and rai. The quality of the stock is good. The herbs and undergrowth resemble those of compartment 5, but ringals are only met with in the higher and moist places. A Military Works bungalow is situated in this compartment	thy seedlings are met with especially those of moru, kail and rai, occurring in groups. In the patch of oak there is also a fair number of moru and bán seedlings with a few rai along the Kua khud. There are established seedlings of morinda in the higher parts, but those of karshu are rare except along dhárs and at easterly and north-easterly slopes.	
7	41	Occupies the precipitous slopes on the left bank of the Kua khud from the road bounding compartment 4 down to the Mohna road The main dhár is rugged and precipitous and the middle of the compartment is pierced by sheer bare walls of limestone From a peak in the east three or four sharp-edged spurs branch off the Mohna road. General aspects south-east and east.	About 40° in the higher and 45° in the lower parts as well as an extensive area of precipitous ground.	...	Limestone mixed with shales along the Mohna road. The sub-soil is clay much developed in the lower parts along the Mohna road and on dhárs wherever they are flat topped, but wanting on the more precipitous ground The topsoil is a free, dark loam very shallow or even wanting on the grassy blanks, but fairly deep in the stocked areas There is a deep layer of humus near compartment 4, but it becomes thinner lower down until it disappears altogether	Eleven acres in the upper part is a continuation of the karshu forest in compartment 4, with the usual accompanying firs and a few moru. There is also about a couple of acres stocked with firs and moru just below the peak mentioned under configuration and a tiny patch of moru and bán just above the Mohna road close to the Kua khud; 28 acres, however, or more than half the compartment is a grassy and often rocky blank dotted only rarely with a few mature moru along the watercourses and a few karshu near the peaks, but mostly without any tree-growth. The karshu forest is fairly dense The proportion of mature trees is very small, most of them having been felled for fuel The stock is of a fair quality There is grass, &c., in the blanks, and similar brushwood to that in compartment 5 in the stocked areas as well as numerous ringals in the upper portions.	Good advance growth of karshu exists in patches in the upper portion, as well as individual established seedlings, and there are also a fair number of rai seedlings and of young moru near parent trees. Recent seedlings of karshu are very common along dhárs and even on slopes, but there are not many of other species. In the blanks reproduction is very backward, there being only a very few solitary seedlings here and there.	Has already been worked for fuel, but should be gone over again after Mohna 8. Blanks to be planted up in 1894 with kail and deodár, only small areas now remaining
8	55	Consists of the slopes on the right bank of the Rangai khud from the road bounding compartment 4 down to the Mohna road. There is a little precipitous ground just above the Mohna road and along the main dhár in a few places, but the slopes are usually moderate General aspect north-easterly.	Usually about 35° but as low as 25° in places where the dhárs become flat topped and as high as 45° occasionally along the Mohna road.	...	Rocks as in compartment 7. The stocked portions possess a deep loam which becomes shallow or is wanting in the eastern portion. There is a good quantity of humus under the forest.	A fir forest, morinda predominating in the higher and rai in the lower parts. There are a good many saplings and poles of karshu in the upper half and they almost appear to predominate on some very small slopes facing east, whilst moru is numerous in the lower half and seems to predominate on some small areas near the Rangai khud The forest is rather more than half stocked on northerly slopes and along nálas where moru abounds but is open along dhárs and in some of the lower parts There are 15 acres of blanks réz, a large blank in the eastern corner and a similar one dotted with a few bog rai half way down along the Rangai Khud With the exception some rai and moru the number of mature trees is very small which is due to the fellings that have taken place The quality of the stock is fair There is a very heavy growth of brushwood and herbs.	Established seedlings of the component species growing more or less in groups are found all over the stocked portion except on northerly slopes where they are rare There are also a very few recent seedlings here and there but reproduction on the whole is poor.	Has been worked for fuel once but should be gone over a second time after Jadi 7. The open blanks that still remain unplanted should be filled up with deodár and kail in 1894.
9	105	Consists of the slopes on the left bank of the Rangai khud from the road bounding compartment 4 down to the Mohna road.	...	...	Limestone predominates all over the compartment and is mixed along dhars with soft clay-slates. The subsoil is clay, rather stiff along dhars and largely developed in the lower portions. The top soil is a	In the upper part there is a well stocked forest of karshu associated with rai and a little morinda with a kail or two along the dhár and moru and kokát along the nalas. There is also a smaller patch of moru and rai and a second smaller patch of moru and bán on south-easterly and easterly slopes along the Mohna road. Altogether there are 35 acres of oak forest usually	A good advance growth of karshu is found in the portions affected by that species and there are a few established seedlings of rai Karshu seedlings are also met with in the open blanks in the vicinity of the parent	Should be reworked for fuel after Mohna 10 The unplanted blanks should be taken in hand in 1896.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartments.	Area in acres.	Configuration and aspects.	Gradient.	Altitude.	Rock and soil	Stock.	Reproduction.	Treatment.
						loam usually shallow, generally wanting in the lower parts and very rich and deep in the stocked portions where it is covered with a thin coating of humus.	densely stocked, but very open in the eastern part adjoining the blanks. The remaining 70 acres is a grassy and rocky blank dotted with a few mature morn and bán in the east and with karshu and rai as well as some kail saplings and poles along the main dhár and in the vicinity of the stocked portion. The stock, which is of fairly good quality, is chiefly composed of saplings, poles and young trees with a small sprinkling of mature rai, karshu and moru, but those of bán are generally confined to the open blanks.	trees, as are also those of moru and bán in the eastern portion. Some kail seedlings along the main dhár are growing vigorously	
Mohna ...	10	50	Comprises the slopes on the right bank of the Katbaú khud from the road bounding compartmen 4 down to the Mohna road. It is furrowed by small nálas with steep sides, and contains precipitous rocks along the main stream and the Mohna road; the Bansara dhár is also rugged in places, but in others it is more or less flat. Prevailing aspects northerly and north-easterly.	30°—40° and rarely above in the western half; 35°—46° and over in the east and along the khud.	...	The rock is the same as in compartment 9. The subsoil is clay cropping out in abundance along the dhárs and on the blanks. The top soil is a dark rich loam, from one to two feet deep, and covered with a good quantity of humus.	A large compact area at the higher elevations is well stocked with a fir forest, morinda predominating in the highest parts mixed with a fair proportion of karshu saplings and poles, rai predominating lower down associated with numerous moru and kokát, the latter being found along the nálas, whilst a few kail saplings and poles are met with here and there. There are also too small isolated patches on north-easterly slopes stocked with rai, moru and a few kokát aloag the Mohna road. Altogether there are 39 acres of forest and the remaining 11 acres in the eastern portion running half-way up the main dhár is a grassy blank dotted with a few moru and bán. The density is very variable, but on the whole the forest is rather more than half stocked. There are some mature trees of the different kinds, but they are few in number owing to the fellings which have taken place, and their quality is not very good. There are the usual undershrubs and herbs as well as ringals.	Advance growth of karshu in patches is found in the higher portions along the road bounding compartment 4, and a few morinda and rai seedlings with some moru and kail are scattered all over the stocked area, those of moru being found near the parent trees in the blanks as well. On the whole reproduction is rather poor.	Should be reworked for fuel after Mohna 11 and a fair number of trees can be removed. The unplanted blanks should be taken in hand in 1896.
	11	25	Comprises the slopes on the left bank of the Katbaú khud from the roadway bounding compartment 4 down to the outer boundary. Bare precipices occur in the lower half, extending from the dhár to the khud and the Mohna road. Gene-	In the lower half 35° 45', average 40°; in the upper half 30°—40°, average 35°.	...	As in the preceding compartments, but humus is present in small quantities only in the stocked areas.	Very poorly stocked. There are 9 acres of oak forest, comprising a small patch of moru with a few kokát in the extreme east, and a similarly stocked strip not more than a chain or two in breadth along the Katbaú khud, extending westward to a fuel road, and from this road up to compartment 4 a mixture of karshu, rai and kokát occupying the slopes near the khud for a breadth of from five to eight chains. These patches and strips of forest are always open and the trees are of an inferior quality The re-	Established seedlings of the component species, though in insufficient numbers, are found all over the compartment, those of moru and kail chiefly in the eastern and those of karshu and rai in the western parts.	To be reworked for fuel after Kanjstra 5. All the grassy blanks have been planted up with deodár, kail and karshu, and where failures have occurred the pits should be refilled.

		ral aspect south easterly			maining area is a grassy blank dotted with a few mature moru and young kail in the eastern and middle portions and with karshu and a few rai and kail in the west.		
12	68	Situated between compartment 11 and the Gambia dhár from the road bounding compartment 4 down to the Agár gád and the outer boundary The dhárs are broad and flat and the nálas very shallow, and a great part of the area is occupied by old fields which were purchased from the Kandar villagers. Most of the slopes are gentle, but there are some precipitous rocks near the Agár gád Chief aspects northerly, north-easterly and easterly.	20°—35°, average 30°, but near the gád 35°—45°, average 40°,	...	Limestone prevails all over the compartment. The subsoil is clay up to three feet deep in places and is overlaid by a rich, dark and fairly deep loam. A thin layer of humus is met with only on stocked areas.	Firs with kail, karshu, moru and kokát occupy 25 acres on all sides, whilst most of the middle portion (23 acres) consists of a dense scrub of cotoneaster, willow and other kokat overtopped by a few rai, moru, karshu and kail. Rai predominates on nearly all northerly and north-easterly aspects. There are also a few deodar along the Agár gád. The forest is open and often extremely so, and 20 acres in the centre and around the edges of the compartment are grassy blanks There are but few mature trees, which are scattered far apart from each other and they are of an inferior quality There is some grass along dhárs and in open places and an undergrowth often very dense of brambles, willows, honeysuckles, indigofera, desmodium, &c., and there are also some ringala.	Patches of karshu advance growth of variable density are found in the higher parts and established seedlings of kail, rai, deodár and moru are also present, though not in sufficient numbers Recent seedling of karshu and moru are rare.	To be reworked for fuel after Mohua 13 Remaining blanks to be planted up in 1894.
13	47	Consists of the slopes on the right bank of the Agár gád from the road bounding compartment 4 down to the Gambia dhár Most of the slopes are moderate and even, there being only a few small precipices along the gad and the spurs in the southern portion are more or less flat-topped. General aspect north-easterly	30° to 45°, average 35° There are some very gentle slopes near the Deothát garden.	...	As in compartment 12.	A fir forest, the firs being mixed with karshu near compartment 4 and with moru along the Agár gád, where there are also a few deodar and kokat, whilst individual kail are scattered here and there. There are seven acres of small blanks scattered over the compartment, chiefly along the Gambi dh r The density of the forest is very variable, but on the whole it is rather more than half stocked, but the quality of the trees is only fair Mature deodar, rai, morinda and moru, though not numerous, are found here and there in the lower portions, whilst saplings, poles and young trees form most of the stock on the higher northerly and north-westerly slopes. The undergrowth is the same as that in compartment 12.	There are established seedlings from 2 to 10 feet in height of kail and rai and of karshu along dhárs and where the leaf-canopy is open, and of morinda on northerly slopes, chiefly where the ground is rather moist A few deodár seedlings are met with in the lower portion and also some young moru here and there.	To be reworked for fuel after Mohua 14. Remaining blanks to be planted up in 1894, but the majority have already been planted up.
14	30	Includes all slopes within forest limits to the left of the Agár gád. It is furrowed by some small watercourses General aspect southerly	30° to 40° average 35°.	...	There is the usual limestone rock and a subsoil of sandy clay, deep in places but wanting on precipitous ground. The top soil is a dark loam rather shallow and profusely mixed with fragments of rock There is next to no humus	Ten acres in the neighbourhood of Kaunti láni and below pillar 12 are poorly stocked with a mixture of firs, karshu, moru, deodar and a few kokat. The remainder is a grassy blank The undergrowth is similar to that in compartment 12.	There are just a sufficient number of seedlings of karshu, rai, kail and moru in the stocked area and a few established seedlings of moru and deodár along the Agár gád, but otherwise there is next to no natural reproduction in the blanks.	To be reworked for fuel next year, but not many trees can be felled. All empty pits in the existing plantation to be refilled. The outer boundary has been altered so as to exclude the portion open to grasing and containing patches of cultivation.

Description of Compartments—(continued).

Name of block	Number of compartment.	Area in acres	Configuration and aspect.	Gradient	Altitude	Rock and soil	Stock.	Reproduction	Treatment
Durán	1	244	Occupies the left bank of the Morar gad up to the lower Konam road, and below the old Simla road It is traversed by many minor dhars, offshoots of the great Durán dhár, and by a number of watercourses, dry in the upper, but with continuous water in the lower half of the compartment. The nálas are narrow with steep sides, and bare precipitous rocks occur in the northern parts Prevailing aspects easterly, north-easterly and northerly	From 40° to 45° and over on some easterly and south-easterly slopes below the Simla road and along nálas, elsewhere 30°—40°, but in the extreme south about 25° only		Limestone is conspicuous along dhárs, cropping out also in some other places. Above it along the Durán dhar are larger deposits of shales, and in places in the lower portions and along nálas beds of hard, ferruginous shales are common The subsoil is a free, sandy, fairly deep clay with a dry, shallow loam resting on it, becoming deeper and moister under forest. All soil is wanting on precipitous ground	Nearly the whole of the compartment consists either of grassy blanks without any tree growth *e g*, slopes along the Durán dhár and towards the outer boundary, or of open blanks dotted with individuals of ban, kail and moru in the lower, and of kail, moru and rai in the upper parts The stocked area is situated along the course of the Morar nala and some of its feeders, and there are two small patches just below the old Simla road Along the lower course of the gád moru and ban predominate and there are a few kail, higher up the proportion of moru and kail is greater and in the highest parts, including the two isolated patches, rai predominates. A few deodar are scattered over the middle of the compartment. Horse-chestnut, poplar, holly, willows, viburnums, cornus, &c are pretty common in nalas and ravines. The portion under forest is extremely open, except close to nalas and in parts stocked with fir, where it is somewhat more than half stocked. There is a fair percentage of I and II class trees which, with the exception of ban chiefly occupy moist ravines They are usually unsound, but the saplings and poles are vigorous and of good quality The soil is covered with grass and ferns in the open and of the usual brushwood under forest Rungals occur along nalas running north	Outside the fire-line there are only a few bán seedlings along the gad and its feeders, and there are no seedlings for a breadth of 8 to 10 chains along the Simla road The rest is well covered with seedlings of kail, ban, moru and deodár from 1′ to 15′ high in the lower and of rai in addition in the higher parts. The advance growth is denser in the open than under cover and along nalas Rai seedlings are not sufficiently numerous On the whole, reproduction is wanting over the greater part of the area and elsewhere it is patchy Young oaks have been much damaged by grazing	Being heavily grazed only dry trees should be taken out, but a few may be marked for free grantees A large chak has been formed including some assessed and other unassessed fields, the latter having been given in exchange for cultivation in Kanjatra. Two other small chaks called Leesta have also been demarcated
	2	130	Occupies the right bank of the Morár gad up to the lower Konam road It is cut up by numerous minor spurs and small usually dry watercourses running into the gad The sides of nalas as well as some slopes facing west and south west, are rugged and precipitous North westerly aspects predominate	30° to 45° and frequently precipitous		Limestone is the chief rock though beds of a hard bluish shale are found along the gád The subsoil is a sandy clay, wanting along dhars and on precipices, but fairly deep in ravines The topsoil is a dry, dark and free loam, shallow on westerly and south westerly aspects, but about half a foot deep on northerly ones. There is some humus on the cooler aspects	A considerable area of westerly and south westerly slopes in the lower half is occupied by open grassy blanks dotted with trees of deodar, kail, moru and ban and a small portion along one of the nalas has no tree growth on it whatever save for one or two moru The slopes between the Morar gad and its main feeder are principally stocked with firs, a fair number of moru and a small sprinkling of kail North of this feeder kail saplings and poles predominate everywhere, mixed with moru and deodar in the higher and with bán in the lower parts, except along the gad, where the oaks predominate. The same holds as in compartment 1 occur along nálas. About one tenth of the stock consists of	Patches of advance growth of kail and mixed with an insufficient number of young deodar are found on north westerly slopes Moru seedlings of all ages exist near the parent trees and those of bán are met with here and there in insufficient numbers. The reproduction of rai is backward	A good many timber yielding rai have already been extracted and only dry wood should now be worked out, but some green trees may be marked for free grantees Cleanings amongst the kail should be made in 1894, and afterwards if possible at intervals of five years.

						mature trees, firs in sheltered places in the higher parts, moru in ravines, deodár, kail and bán scattered over the areas occupied by these species The fir forest is about half stocked, and the remainder is more open, especially along dhárs The quality of the stock is fairly good only in the upper portions.		
	3	57 Occupies the right bank of the Kashmoi gád below the Konain road. It is traversed by a number of dry water courses with rugged and sharp-edged minor dhars between them. The whole is broken up by protruding rocks. Main aspects northerly and north-easterly.	Usually about 45° but as low as 30° occasionally along nalas and on some minor slopes; with some bare precipices.	..	As in compartment 2. There is very little humus except in ravines.	Mostly moru and bán with some deodar, kail, rai and kokat. There is an open blank dotted with a few kail saplings along the Kashmoi gád and the forest is also interspersed with narrow grassy blanks. Fairly stocked along most nalas and on northerly slopes, but very open elsewhere. Most of the trees are knotty and crooked. The soil is chiefly covered with grass, though brambles barberry, sarcococa, &c., are found under stock.	Seedlings of kail 2′ to 10′ high in small patches occupying sheltered places are scattered all over the compartment and are mixed with an insufficient number of deodar, moru and bán seedlings. Recent seedlings are rare and, as a whole, reproduction is very poor.	Owing to the condition of the stock, fellings are out of the question.
	4	153 Comprises all the slopes below the Konain road from the Kashmoi gád to the Khopti dhár. It is traversed by a number of bare and sharp-edged offshoots of the Khopti dhár, which subdivide into other minor spurs, and it is cut up by several dry watercourses with steep sides. Bare and precipitous rocks rising up here and there make it very rugged. The aspects are very varied, but westerly and south-westerly ones predominate.	Usually 45° but some slopes are very precipitous. The beds of nalas have gradients of on an average 35°, and above pillars 7—9 the slopes are 20° to 30°.	...	In the upper parts there is limestone with shales of various colors. Lower down shales from blue and crumbling to hard and massive ones predominate. Along the Kashmoi gád a bluish crystalline very hard quartz-like rock is exposed. The subsoil is somewhat dry and clayey and is mixed with fragments of the underlying rocks, and the top soil is a free brownish shallow loam. In places the only soil is clay. Humus is usually absent.	The most wretchedly stocked compartment in the block, nearly three-fourths being occupied either by rugged and precipitous blanks, without any tree growth or by open blanks dotted at great intervals with individual deodár, kail and moru in the higher parts and with kail and bán along the outer boundary. These blanks occupy the westerly and south-westerly and in places even the north-westerly slopes. The stocked portions are on slopes facing more or less north, the species being moru, deodár, kail and rai in the higher portions, bán, kail and a few moru lower down down. There is a sprinkling of the usual kokat along the nalas and some are mixed with the bán and kail. The forest is often very open and never dense. There are a fair number of mature trees, but they are of very indifferent quality. The soil is immediately covered with grass, ferns and indigofera in the open with desmodium, brambles, barberry, &c, where there is any tree growth The small ringal occurs along the boundary line.	Very backward, being represented by a very insufficient number of kail, bán, moru and deodár seedlings near the stocked area.	Ditto
	5	205 Occupies the head-waters of the Kashmoi gád above the Konain road. being bounded on the east by the Khopti dhár. The edges of dhárs are rugged and precipitous and the sides of nalas in places are formed by vertical walls of rock. The whole presents a rug-	Sides of nalas and the dhárs are precipitous, but beds of nalas are about 35°. Over 45° on westerly and south-westerly aspects, 30° to 45° in the fir forests, and on other northerly slopes 40°—45°.	...	As in the upper part of compartment 4, the shales being more abundant than the limestone near the Konain road. The subsoil is a sandy clay mixed profusely with rock fragments. It is wanting on precipitous westerly and south-westerly slopes, but is from 1′ to 3′ deep on northerly aspects and on the more moderate slopes. The	Above one-fourth of the area mostly in the northern portion consists of precipitous southerly, south-westerly and westerly slopes with no tree growth on them, or at best dotted only with a few individual deodár, kail and moru. Above these blanks along the Khopti dhár the stock is composed of stunted, much-branched, knotty and deformed deodár, a few rai and kail mixed with kokát, such as viburnums, willows, &c. The best stocked portion is in the southern half, the species being the two firs of which morinda predominates whilst there are the usual kokat along the nala	Recent seedlings are almost wholly absent, but along the main ridge there is good advance growth of morinda from 12′ to 15′ high with some young rai kail, and kashu. Lower down morinda seedlings are scarcer, but rai seedlings occur in patches, as do also advance growth of kail and deodár on westerly aspects.	Not to be worked as it is open to grazing, and the stock in the northern half is very poor.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude	Rock and soil	Stock.	Reproduction.	Treatment.
			ged appearance. All aspects except easterly are represented.			top soil is a free sandy loam, deep only on northerly aspects There is humus only on northerly stocked slopes	and ravines as well as a number of moru. A few deodár are found on westerly aspects and along the Komain road There are some stunted karshu along the main ridge. Fir saplings and poles form the stock in the highest portions, mature firs and moru occupying the nálas and lower slopes, whilst those of deodár and kail are scattered all over the northern part. The deodár forest is very open, the fir forest open on westerly slopes, but dense elsewhere. Tall, straight rai, with clean boles are found along the Komain road and in ravines, but in the higher portions and along the main ridge they are stunted, flat—crowned and unhealthy, and even saplings and poles are dying out. The ground is covered with the same undergrowth as in compartment 4 and under the fir forest there is a dense herbaceous growth of strobilanthes, &c., during the rains. Ringals are found in nálas and understock.	In the northern half the blanks are without any seedlings, but some stragglers near parent deodár, and this may be perhaps due to the late fire. On the whole reproduction is inadequate	
Ekra	6	9½	Occupies the headwaters of the Morár gád down to the Komain road and some slopes of small area above the Tons road to the east of pillar No. 12 It is broken up by a succession of minor spurs and small watercourses. The slopes above the Tons road face south, but the predominating aspects are northerly and north-westerly	30° to 45° on northerly and north-westerly aspects On westerly and south-westerly slopes and along the main ridge over 46° and sometimes precipitous. Some beds of nálas have gradients as low as 20° but this is not frequent	...	Limestone with shales of various colors and degrees of hardness. The subsoil is a yellowish clay mixed with fragments of the underlying rocks, and in many places, as on the northern blanks, cropping out to the surface The top soil is a dark free loam, deep and moist on northerly slopes, but dry and shallow on westerly ones and in the lower portions. A layer of humus from ½ to 1' deep covers the stocked portions.	The slopes between the Kashmoi dhár and a small nála is a grassy blank dotted only with a few deodár and kail along the dhár The slopes above the Tons road east of pillar No. 12 is a grassy blank with a few stunted and much browsed kail, rai, and karshu seedlings. The remainder is a fir forest with an appreciable mixture of deodar, kail, moru and kokat. Deodár puts in an appearance on westerly and south-westerly slopes and on some rocky precipices mixed with moru and kail, whilst there is the usual kokát in the nálas, as well as some mature moru. The number of mature trees is very small, and consists chiefly of the firs and moru in ravines and of deodar on open westerly blanks. The mature deodár are, as a rule, flat-topped, much branched, unsound and unfit for timber as are also most of the moru, but there are some fine rai with clean boles along the nálas and on northerly slopes The forest is either open or very open on westerly and south-westerly aspects, but is better stocked on the cooler slopes. In the open blanks there are ferns and grass, and in the stocked portions and nalas there is a dense growth of ferns, desmodium, brambles, honey-	A good advance growth of morinda and kail represented by seedlings 1' to 10' high with a mixture of a few young karshu is found along the main ridge for a few chains down the slopes. The open blanks facing west and south-west are also thinly covered with kail and deodar seedlings in insufficient numbers. On stocked areas facing north and north-west there are only a few small patches of rai advance growth here and there. Moru seedlings of all ages are found near the parent trees.	Dry trees for fuel and some mature rai have already been extracted from the lower portions, and as it is grazed over, only dry trees should be removed in future.

						suckles, willows, sarcococca, strobilanthes, &c Ringals exist on northerly slopes and along the nálas.		
1	164	Occupies the whole of the Phaphrota gád basin and a portion of the Agár basin between the stream and the Bawána dhar. Its upper portion is very precipitous, whilst the whole compartment is cut into deep gullies with sharp-edged spurs. Prevailing aspects north-west and south-west.	40°—60° and over, average 45°.	...	Limestone with beds of shale interbedded, and covered with a stiff clayey soil usually above two feet deep and mixed with fragments of the underlying rock Bare perpendicular rocks frequently outcrop. There is a loose loam with some humus under the stocked portions.	A somewhat open forest of moru and bán with kokat along watercourses is found on the left bank of the Phaphrota gád, but the remainder of the compartment is completely void of trees. There is the usual undergrowth under the forest, and grass on the open slopes. Some small ringáls occur near the stream.	Seedlings of the two oaks of different ages are scattered throughout, but those of bán are rare and are kept down by grazing and also by fires except in moist places	Open to fire, grazing and lopping The stocked portion should be protected from fire as soon as possible. The outer boundary has been changed so as to exclude the cultivation of Bangi ser and Koyaka Kabr
2	130	Contains the upper basin of the Patráni gád included within forest limits, and enclosed by precipitous ridges bare even of grass; aspects south and south west on west and north on the left bank.	30°—60°, prevailing 45°	...	Limestone rock frequently exposed or covered with stiff clay of variable depth. There is a light loam along the tree-clad ravines.	The southern slopes and the edges of spurs are bare of trees, but elsewhere there is an open forest densest in ravines of bán poles and mature trees mixed with moru, ayár, burans and kokat Moru is found in the higher parts, ayár and burans everywhere, saplings of the latter being abundant in the lower portion Kokát trees consisting of wild pear, meliosma, &c, are plentiful along the gád. The larger trees are generally sound, though much damaged by fires and lopping, and the smaller trees and poles are very stunted apparently from the same causes Undergrowth as in compartment 1.	There are a good number of oak, ayár and burans seedlings on slopes facing the north and north-west and in all moist places, but the young oak have been kept down by sheep and have a very bushy appearance.	Stocked portion to be fire protected; lopping rules to be more strictly enforced.
3	62	Consists of the very rocky, rugged and precipitous basin of a small feeder of the Suka gád below the Patrani-ka-top. Aspect south-east.	Everywhere over 45°...	...	The limestone rock is almost everywhere exposed, soil only existing in its cracks and fissures	Entirely devoid of tree-growth save for a few bán and moru with the usual sprinkling of ayar, burans and kokat skirting the gad and a few chains above it at the northern end	Almost *nil* ..	Entirely useless as forest; to be formed into a grazing area and allowed to be burnt annually.
4	179	Contains all that part of the basins of the Bagára gád and a second tributary of the Suka gád below the path to Kandal. Aspects north-east to south-east.	30°—60° average 35°,	..	Limestone with a stiff clay above of variable depth covered by a sandy loam about 9 inches deep and in ravines, with some humus.	The edges of spurs and the portion adjoining the Kandal path are bare, whilst elsewhere there is a mixed forest of moru, bán, ayár, burans and kokát. Moru is common the higher parts, kokát along the watercourses, whilst the other species are found mixed everywhere. Undergrowth as before.	Seedlings of all the component species except ban, although not in abundance, are found everywhere in the stocked portions, but bán seedlings are very rare.	Stocked portions to be fire protected. The assessed cultivation has been demarcated as the Burwawan chak, and the cultivation of small, scattered, unassessed plots may be allowed on payment of rent to the Forest Department.

APPENDIX C.

Description of Compartments—(continued).

Name of block	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil	Stock.	Reproduction.	Treatment.
	5	266	Consists of all the rocky, rugged and precipitous ground within forest limits between the Bodigad and the ridge bounding compartment 6, as far south as the Kandal path. General aspect south	30°—45° average 40° but along the Hajawa dhár 60° and over	..	Limestone often exposed with beds of slate cropping up here and there. Along the Hajawa dhár only bare rock; lower down a stiff clay covered with a rich soil about six inches deep.	Completely blank save for three small areas, one of them lying between pillars 6 and 8 and half stocked with rai and karahu, the second in the extreme east, half stocked with moru, ayar, and burans, and the third and largest area on the left bank of Bodi gad pretty fully stocked with firs and karahu. Undergrowth as before.	In the stocked parts advance growth is fairly abundant, but young seedlings are scarce.	Fellings have taken place in the part facing the Bodi gád. The Chakráta-Kandal road extends to pillar No. 8. Open to fire and grazing, but the larger stocked areas to be brought under fire-protection. The cultivation has been formed into four chaks. Baithat, Chandúri, Pamikaboi and Buwawan I.
	6	225	Situated between compartment 4 and the outer boundary being bounded on the south by the Kanda path and the Binar gád; cut up by many small ridges often ending in precipices. Aspect north-east varying to south.	25°—45° average 30° southern faces of spurs usually precipitous.	...	As in compartment 5 with a thick layer of humus in ravines.	The oaks (moru and bán) are the principal species. Along the Hajawa path rai is mixed with the bán whilst along the outer, forest boundary on slopes facing the south ayár and burans exist in variable proportions; kokát such as wild pear, maples, celtis, &c, occur only along most ravines. The portion from the Ekra peak to a chain below it and along the Kaudar path are blanks. The forest is a pretty open one save in ravines.	Bán seedlings, though not numerous, are met with all over the lower portion of the compartment, and moru seedlings are numerous under their parent trees. Advanced growth of ayar and burans is also sufficiently numerous.	Stocked portion to be fire protected. Two chaks, Siwa and Sabágí, have been formed and they include all the assessed fields.
Kulereí ...	1	115	Occupies the left bank of the Suka gad as far as the Rogai ki dhár, and is drained by four small streams. Main aspects south west and north-west.	On an average 40°; precipitous bordering the gad	...	The subsoil is a stiff clay in places more than two feet deep, and except the rocky portion to the south it is generally covered with a dark friable top soil somewhat over half a foot deep. Humus is found only in ravines and in the upper well-stocked portions.	The tops of crests and the southern portion of the compartment are treeless, whilst elsewhere there is an open or very open forest or areas with scattered trees only consisting of moru, bán, burans and kokat. Moru is the chief species along the Rogai ki dhár and for some chains below mixed with bán. Burans saplings and poles are found in abundance throughout, but especially in the lower portions, whilst kokát borders the main stream.	On slopes facing the north there is good reproduction of moru and burans, seedlings of all ages being found, those of burans being the most abundant; on southern slopes reproduction is almost nil, but some seedlings are to be found on the portions facing south-west and west. Most of the seedlings are, however, kept down by grazing	The compartment should be fire-protected
Kutered .	2	130	Comprises the upper basin of the Gudurádi nala as far south as the large tributary which rises near pillar	Almost always 45° or above, but along watercourses 30° only. There are rocky vertical walls along the up-	.	The whole compartment is covered with huge limestone blocks, fragments of which cover the ground along the Gudurádi nala.	More than half the compartment is a rocky grassy blank. The remainder contains a very poor and very open crop of moru, bán, burans and kokat in nearly (chiefly at the western) equal proportions. Moru occurs extremity, whilst the others are met with	Reproduction is met with only at the eastern extremity on slopes facing the north-west where there are some moru seedlings and	Stocked portion to be fire-protected. Cultivation may be allowed on payment of rent. There are some unassessed

		No 18 It is enclosed on the north by high ridges. whilst on the south there is no protection, and the precipitous rocks on its northern boundary gives it a very rugged appearance. General aspect southerly.	per boundary		The soil, which is clay with a thin covering of dark rich loam, is found only here and there along nalas.	along the Gudurádi nála and between two of its feeders. The ground is immediately covered with grass only.	along nalas, where there are some seedlings of the various component species.	fields near the trigonometrical station.
...	3	62 Occupies the remainder of the basin of the Gudurádi nala within forest limits. Aspect north-west with but slight modifications.	Usually about 40° but exceeding 45° near the Uda dhár.	...	The usual limestone notch developed along the sharp-edged dhárs. The subsoil is clay of variable depth covered with a rich, dark, loose loam about a foot deep.	With the exception of a strip of ground of variable width along the outer forest boundary the compartment is well stocked with a mixed forest of moru, bán, ayár, burána and kokát. Burans occurs chiefly in the lower portions and kokát in ravines. The trees have been much damaged in the lower portions by excessive lopping. There is grass in the open and the usual brushwood under cover.	Moru seedings of different ages are found in the upper parts, but as usual only near seed bearers Bán seedlings are rare, but the advance growth of ayár and burána in the lower parts is very good.	To be fire-protected. Lopping rules to be more strictly enforced.
...	4	179 Occupies the basin of a small stream rising from the Uda dhár and and passing by pillar No 20. It is surrounded by high ridges on the north-west and south and is very rocky, rugged and bleak Aspects very variable, but easterly and southerly ones prevail.	Usually over 45°	..	Huge blocks of limestone are scattered all over the compartment, and the soil, which only exists in the interstices between the rocks is a dark, sandy, very shallow loam, resulting from the disintegration of the limestone.	The entire area is an open grassy and rocky blank, with the exception of a portion between pillars Nos. 18 and 19 and two small narrow patches below the Uda Tibs, which contain a mixed growth of moru, burána and kokát with individual rai. Ban and ayár also occur, but chiefly as saplings and poles. The ground is covered immediately with grass and ferns with some brushwood in ravines.	Only very few seedlings are to be found here and there	To be treated as a grazing ground and allowed to be burnt annually.
...	5	266 Occupies that portion of the right bank of the Binár gad between the main khad and a spur rising from the Sewa dhar and passing by the Tatra fields to the Binar gad. The ground is fairly even, becoming more broken towards the east. General aspect north.	30°—60°, average over 40°.	...	The usual limestone interstratified in one or two places with beds of a soft crumbling shale. The soil which is present everywhere save on crags is the usual clay of variable depth overlaid by a dark, rich, loose loam, which is covered under well-stocked forest with half a foot of humus.	The higher parts are stocked with moru with an appreciable sprinkling of rai; whilst lower down bán, burans and ayar with kokat along the nalas are the chief species. The ridges and minor spurs are either complete blanks or are dotted with a tree here and there. The crowns of many bán have been damaged by bears. The undergrowth is similar to that of the preceding compartment.	Very fair: there being seedlings of all species adjoining the stock.	To be fire-protected.
	6	225 Comprises the slopes below Sewa dhár from compartment 5 as far north as the Binar gad. General aspect north-easterly modified by small watercourses to northerly and north-westerly.	30° to 45°, average 35°.	...	The usual limestone rock with beds of shale cropping out here and there. The subsoil is a stiff clay three feet deep in places and covered with a dark, loose loam about half a foot deep. Humus exists only in moist places.	Except a few blanks along spurs especially along the main ridge the upper portions are fairly well stocked with moru and bán, while lower down there is a mixture of bán, ayar, burána and kokat in variable proportions. Adjacent to compartment 5 there are a fair number of rai The trees are of fairly good quality, but the bán near cultivation have been overlopped. There are the usual undershrubs.	Not so good as in compartment No. 5, the seedlings being browsed by sheep and goats and reduced often to mere scrub.	Stocked portion to be fire protected. Three chaks have been formed, Sewa, Salagi and Tatri which included all assessed cultivation.

APPENDIX C.

Description of Compartment—(continued).

Name of block	Number of compartment.	Area in acres.	Configuration and aspect	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction	Treatment.
Amlokri	1	182	Comprises the slopes on the right bank of the Binár gád from the Noru khad to a prominent spur running down from the west of Sapla tiba to the gád. It is traversed by two perennial and several smaller nalas. The main dhár is very rocky and rugged, and the minor dhárs have sharp edges and steep sides, whilst bare rocky walls crop out here and there all over the compartment. General aspect north-easterly.	Usually about 45°, but in places as low as 35° or even 30°.	.	Limestone pierced in places by veins of quartz and mixed with shales in the lower portions The subsoil is a sandy clay cropping out to the surface along dhárs and in blanks The top soil is a free, dark, rich loam shallow in the higher parts and wanting on precipices but from a half to one foot deep in the lower portions. Humus is usually wanting	An oak forest, the species being moru, bán and a little imai, mixed with ayár, burans and kokát The first two oaks are found everywhere, the moru being commonest along nalas; imai is met with only along the Binár gád. Ayár and burans occur everywhere but are most abundant on north-easterly slopes. Kokát is chiefly confined to the moist places along the gád and the nalas. The forest is usually fairly dense along the gád and nalas and at northerly aspects, but it is often very open along dhárs and on north-easterly and easterly slopes, being on the whole not quite half stocked Twenty seven acres along the Amlokri dhár and on some north-easterly and easterly slopes are grassy blanks dotted in places with a few bán along the verge of the forest There are a fair number of 1st class trees of all species, but the smaller classes form a large proportion of the stock, and a number of burans, ayár and kokát although not attaining large dimensions are nevertheless mature and exploitable Good tall trees are found along the nalas in the lower half, but on the tops of dhárs and precipices and generally in the higher portions the trees are stunted, much branched and hollow The ground is covered with grass and ferns and a few bushes of indigofera, desmodium, brambles, &c., under forest.	With the exception of a few seedlings of bán, moru and kokát in the narrow strips along the nalas which escape being burnt, reproduction is almost entirely wanting.	Fire protection should be undertaken as soon as possible and then the compartment will probably be in a fit state for working at the end of the present plan
	2	159	Contains the slopes on the right bank of the Binar gád east of compartment 1, as far as the Amlokri dhár, which meets the Khatwa gád at its junction with the Binár gád It is cut up by one large and several small, mostly dry nalas The top of the main dhár is very rugged and precipitous and contains a number of bare peaks rising up at intervals all along it A rocky wall runs through the	Omitting precipices 45° in the upper portions, but on the slopes lying below the precipitous rocky wall 30°—45° and sometimes as low as 20°, the average being 35°.	...		An oak forest as in compartment 1, kokat is very numerous along the Bnár gád where it is mixed with imai On the whole it is more open than in compartment 1, but is fairly dense in places along the gád and nalas and on northerly, and north-westerly slopes. There are 36 acres of grassy blanks consisting of two narrow strips along the two principal dhárs, and of patches on north-easterly and easterly slopes in the extreme east of the compartment The proportion amongst the different classes of trees and the quality is the same as in compartment 1, as is also the undergrowth	As in compartment 1.	Ditto ditto

			middle from east to west General aspect north-easterly, but portions look to the north, north-west and east.							
	3	177	Comprises all the ground on the right flank of the Amlokri dhár within forest boundaries The whole compartment is very rugged and rocky and contains numerous precipices but there are some moderate, even slopes on the right bank of the Banguda nala. Aspect south-easterly, easterly and on the right bank of Banguda nala north-easterly.	45° and over though in places 35° only, on the right bank of the Banguda nala 30°—40°, average, 35°.	...	Limestone much developed everywhere and pierced in one two places by veins of black chert. A sandy clay crops out in the lower portions, but higher up the soil is a free very shallow, sandy and stony loam Soil is wanting over large areas but is fairly deep on the slopes to the right of the Banguda nala. There is no humus.	Most of the compartment, 135 acres, is a grassy, rocky blank dotted with a very few mature bán, far apart from each other in the western and eastern portions, but without any tree-growth in the middle portion except a few bushes of euphorbia, rhus and rhamnus triquetrus. There is a small chak of two acres called Begi near the lower end of the Amlokri dhár, and out of the rest of the blank all but 14 acres may be classed as unproductive. There are 42 acres of oak forest consisting of a large patch on the right bank of the Banguda nalá facing the north-east and of four small patches in the eastern portion of the compartment. The species forming the stock are bán, ayár, burans and kokát, bán predominating everywhere, ayár and burans being most abundant in the large patch, and kokat with a few moru and imái occupying the slopes and nalas in the east The forest is always open and usually very much so, whilst the trees are stunted and excessively lopped. The ground is covered with grass and ferns and with barberry, brambles, myrsine, sarcococca, &c, and the small ringal in the stocked areas.	Usually *nil*, but there are a few rare seedlings of the different species of various sizes up to six feet in the stocked patches.	To kept as a grazing ground and allowed to be burnt annually.
41D Dánda ...	1	68	Comprises all the slopes on the right bank of the Jaboa gád It is traversed by several small nalas and minor dhárs which are not prominent except some in the east with sharp edges and steep sides. There is a chak of five acres in the west The aspect is northerly modified to north-west in the eastern and to north-east in the western portions	30° to 40°, average 35°.	...	Limestone with shales varying from soft, friable, blush rocks to hard and grey ones. The subsoil is a deep, sandy clay overlaid with a free, dark, rich loam from a half to one foot deep Along nalas there is a slight quantity of humus.	The stock consists in order of predominance of ayár and burans, moru, bán and kokat with a few deodár near Bahiána. The first two species exist all over the compartment, but owing to their consisting mostly of saplings and poles, their presence at a distance is not noticeable and the forest seems to be composed almost entirely of bán and moru, the latter being most abundant along nalas, where kokat is also very abundant Cornus macrophylla, C. capitata, hazel, alder and the two hornbeams, C' viminea and fagines. The compartment is well stocked and sometimes very dense on northerly slopes and along nalas although open along the dhárs Besides the chak of five acres there are only two small blanks two acres in extent There are a good number of mature trees, most of them being tall, vigorous and full crowned, and a number of kokát, bán ayár and burans, which are below I class dimensions are nevertheless mature and fit to be removed. The proportion of I class trees is very small. The ground is covered with grass in the higher parts and along dh rs wherever the cover is light, whilst along nalas, there is the usual brushwood of indigoferas desmodium, brambles, &c., with small ringal along the Jaboa gád.	On the whole poor, but there are established seedlings of all kinds along nalas and in other small moist areas which escape the annual fires, but along dhárs and on open slopes reproduction is *nil*.	To be worked after Darna 3, but this will not probably take place until after the end of the present plan The fuel can be best extracted by making a path to join the one which terminates at pillar No, 8 below the Chanduri peak A chak called Bhaijotya has been formed in the western corner. Fire-protected for the first time this year.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres	Configuration and aspect.	Gradient.	Altitude	Rock and soil.	Stock.	Reproduction.	Treatment.
	2	75	Comprises the slopes draining into the Hajawa gád from compartment 1 east-wards to a spur running down to the gád from the Dandá dhár at pillar 47 It is broken up by a number of rugged, sharp-edged dhárs alternating with dry and deep nalas. Precipitous rocks crop out along the main dhár and bare walls of rock occur along the gád, whilst there are smaller precipices here and there General aspect northerly	45° and over in places but sometimes as low as 35°.	...	Limestone with friable blue and grey shales, which are most common in the lower portions The soil along dhárs and in the blanks is a sandy clay, but in the nalas it is a deep, dark and rich loam, profusely mixed with fragments of rock. There is scarcely any humus.	An oak forest, bán predominating everywhere, mixed with ayár, burans and moru in the higher portions and with a few rai along the gád, kokat consisting of kat-bhoj, Cornus macrophylla, and capitata, elm, the two hornbeams and some laurels, &c., is very abundant along the gád and the nálas. There are some open blanks along the main dhár and on some north-easterly and easterly slopes, which are dotted with just a few bán and in places the beds of nálas are also blank. The forest is excessively open along dhárs and on easterly slopes but dense along the gád. There is a fair proportion of mature I class trees of all kinds, though those of bán are more numerous than those of all the other kinds combined They are, however mostly damaged by fires, except in moist ravines, where there are some fine and tall trees. The ground is covered with grass and with brambles and barberries, &c, along nalás and the small ringal along the gád.	Almost *nil* owing to fires, but there are just a few bán and moru seedlings in one or two places.	Fire-protected for the first time this year No fuel works will be required during the period of the present plan.
	3	94	Comprises the remaining slopes within forest limits east of compartment 2, to which it is similar in configuration but even more rugged.	As in compartment 2, but somewhat more precipitous.	...	As in compartment 2	... As in compartment 2. There are a few chir in the eastern portion.	As in compartment 2.	Fire-protection not necessary at present. This compartment may eventually be formed into a grazing ground
Hajawa ...	1	99	Consists of two small basins on the right bank of the Hajawa gád east of Nala pánidhár. The ground is rugged and precipitous immediately below the main fuel road and along the watercourses General aspect north-east.	From 30° to 45°, average 35°	...	The underlying rock is invariably limestone, fragments of which are abundantly mixed with the stiff clayey subsoil, which is about 5' deep and covered with with a foot of rich loam and humus.	Principally rai and morinda the former predominating at the lower the latter at the higher altitudes. Kail and deodar are found mixed in small numbers with the firs in the lower parts whilst ayar, burans and kokat occupy the immediate vicinity of the gád and moru occurs scattered throughout. The crop is densest on slopes facing the north, whilst the edges of slopes facing the north and north-east are thinly covered with trees although seedlings are pretty numerous. There is an undergrowth of brambles, indigofera, &c.	Along the edge of the Hajawa dhár advanced growth of rai and morinda is plentiful but recent seedlings are very rare, being only found near blanks. Some portions of the compartment have, however, very few seedlings, or none at all. The small blanks are being covered with fir and kail seedlings	Fellings which took place in 1880 were confined to the western portion of the compartment, 100 firs being converted into fuel, producing 19,900 cubic feet stacked. A fuel road has been made through the upper part and a second one lower down extends to the western

									boundary. It is closed to grazing, and the portion not touched in 1890 should be worked over for fuel after Mohna 5, some of the lower fuel roads being extended eastwards. In case reproduction is not satisfactory throughout sowing in lines should be made about 1906.
2	122	Comprises the basin of a small stream on the right bank of the Hajawa gád west of the Nala páni dhár. Aspects north and north-west, the latter predominating.	25° to 45°, average 35; rocky and precipitous in places.	to 9423	The rock is limestone interstratified in places with beds of red shales. Near Ekra tiba these rocks become ferruginous and there are large holes from which iron ore used to be excavated. The subsoil is generally clay but is usually covered to a depth of 3 feet by a dark, rich and loose loam mixed with fragments of the underlying rock. Humus is plentiful.	Chiefly fir with a large number of morinda saplings. Moru also occurs in the lower half of the compartments where, likewise, there are a few saplings and poles of deodár and kail. The north-westerly slopes are better clothed with trees than those facing the north-east, whilst there are usually trees on the ridges. The quality of the stock is fairly good. There is an undergrowth of desmodium, indigofera, strobilanthes, &c., and in open places a dense growth of grass and ferns.	Along the Hajawa dhár the reproduction of firs especially morinda is good, but lower down recent seedlings are almost entirely absent Young moru are common near their parent trees, and ringál seedlings abound.	In 1880 and 1881 244 fir trees were felled and yielded 54,000 stacked cubic feet of fuel. The compartment is completely tapped by a system of fuel roads and closed to grazing. Dry wood only to be taken out. Sowings in lines may have to be resorted to about 1907.
3	107	Occupies the right half of the basin of the Pachalta nala, which runs into the Hajawa gád. General aspect north-westerly.	Average 30° occasionally 40°; ground much broken near the nala.	to 9422	The rock is limestone, fragments of which are mixed with the overlying clay. The top soil is a loose sandy loam more than a foot deep and covered with another foot of humus.	Mainly fir mixed with some moru in the lower portions, and with numerous kokát along the Hajawa gád. Some deodár and kail poles as well as a few individual trees of these species are also met with. The forest is densest near the Ekra tiba. Undergrowth as in compartment 2. Ringáls are numerous.	Splendid advance growth of firs near Ekra tiba, but reproduction gets much scarcer and becomes patchy lower down. On both sides of the upper fuel road there are very few seedlings and no recent ones. Moru seedlings are fairly common in the lower portions and young ringáls a bound near the former crop.	In 1881 and 1882 460 fir and 5 oak trees were felled, the outturn in stacked cubic feet of fuel being oak 350 and fir 134,000 cubic feet. The compartment is closed to grazing and completely tapped by three fuel roads and some minor branches leading to the Hajawa gád. Dry wood only to be taken out. Sowings in lines may have to be made about 1906 in case a sufficient number of natural seedlings have not come up by that time.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration or aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Hajawa ...	4	194	Situated between the Pachalta nala and a small feeder of the Hajawa gad to the west and traversed in the middle by the Sikolda dhár; very precipitous along the Pachalta nala. Prevailing aspect north-easterly, but varying from north to east.	25° to 60° average 35°; over 45° along the Pachalta nala.	...	Limestone rock with a stiff clayey subsoil, in places more than three feet deep and mixed with fragments of the limestone. Top soil a rich, loose loam more than a foot deep and covered in stocked places with a thick layer of humus.	A narrow strip along the main ridge is stocked with kareku with a few fir only, which, however, predominate lower down mixed with some moru. Solitary trees of deodar and kail occur in the lower parts, where there are also a few kokát. The forest is densest in the higher parts. Very little undergrowth and in open places grass only; ringal seedlings, however, abound.	Reproduction is not so good as in the adjoining compartments. Patches of kareku seedlings skirt the mature crop, whilst moru seedlings are found near old trees, but fir seedlings are few and irregularly distributed.	In 1879 fellings took place and the whole compartment is closed to grazing. The upper portion is tapped by two fuel roads which should be continued to the lower parts. About 24 acres were sown with rai in 1882, in lines of pits 10′ × 5′, failures being repaired in the following year. About 20 per cent of the pits now contain seedlings. The place is exposed to severe frosts and sudden thaws, and the blank near Chanddri should be planted up in 1908. The oak portion to be worked for fuel after Hajáwa 1, but elsewhere only dry wood to be taken out.
	5	148	Consists of that portion of the right bank of the Hajawa gád between compartment 1 and the Jabca gád. It is divided into minor slopes by several small watercourses, the general aspects being northerly with minor north-east and easterly ones. Near the lower end of the compartment there is a sheer wall of rocks without tree-growth.	Usually about 30° but in places over 45°.	...	The rock is an easily disintegrating limestone, yet near the Hajawa gád a few chains below the path to Khatwa there is a bed of considerable thickness of blue and purple shales, the lower strata of which are slaty. This bed during the rains is saturated with water and becomes covered with a yellowish white efflorescence of a lum crystals. Lower down is a precipitous limestone rock traversed by two or three veins of a black and white glassy quartz. The soil is a stiff yellowish clay in places more than three feet deep, and covered in ravines with a layer of humus.	The stock consists chiefly of saplings and poles of moru, bán, aysr and kokát with some large oak trees scattered all over the compartment. Slopes with northerly aspects are generally well stocked, whilst those facing the east and north-east are either quite blank or only thinly covered with trees. Kokat (laurels, maples, &c.,) become numerous lower down the valley. The greatest height attained by the trees is about 100 feet, but most of the large ones are unsound. At the western end are found a few saplings with some solitary trees of kail, rai and deodar along the Hajawa gad and in moist ravines which often escape the annual fires. The forest is fairly dense but higher up the valley and along the main ridge and minor spurs it is very open, the trees being of very indifferent quality. Undergrowth of indigofera brambles, &c., in ravines and of the smaller ringal near the gad, with a dense growth of grass on exposed slopes.	At the foot of the valley along the lower course of the gád, especially in the portions which escape the annual fires there is good reproduction of kokat and of moru, but higher up seedlings become less numerous although young moru are still common under the old trees. The reproduction of bán is very unsatisfactory. The grassy blank in the west contains a number of kail and rai seedlings, but their growth is checked by fires and grazing, which give them a scrubby appearance.	Has never been worked nor protected from fire or grazing, and no roads have been made but the upper fuel road just reaches its western extremity. The oaks are topped by the Baniána villagers and are stunted in consequence whilst fires constant from next page have made many of them as well as the other trees, hollow and crooked. Kail has also suffered by the villagers hacking them contrary to the rules for 'jógan.'

Hajawa	...	6	232	The basin of the Bodi gád with the exception of a slope on the left bank below Chandári. It is divided into three smaller basins by three conspicuous dhárs. General aspects south and south-west, occasionally modified to north, north-west and north-east.	Usually 35° with some slopes over 45°. A line of precipices separates the stocked part from the blank.	...	The usual limestone interstratified in the upper portion with beds of grey shales. The subsoil is a stiff clay usually about two feet deep mixed with fragments of limestone and containing a small percentage of sand. The topsoil is a dark rich loam covered with a thick layer of humus under the forest.	Chiefly a dense crop of karshu saplings and poles occupying slopes facing the south, south-west and south-east, with a slight mixture of rai Firs predominate on slopes facing the north-west. There are very few mature trees either of oak or fir, such trees being mostly near the Tons road and they are generally unsound owing to the fires of former years before protection was undertaken The blank area below the precipice from pillar No. 10 to the lower fuel road is quite devoid of trees and covered only with grass Under forest there is an undergrowth of brambles, desmodium, indigofera, barberry, skimmia, &c.	The reproduction of karshu is splendid and in places complete, but elsewhere occurs in patches or is occasionally totally absent. Fir seedlings are also sufficiently numerous, but reproduction is scarce under the more densely stocked portion Ringal seedlings abound.	The same villagers possess rights of way to Kharsi and Khatwa, to water for two water-mills and a water-wheel (for making wooden bowls, &c), these being situated in the gád between pillars Nos. 1 and 2, where there is also a kiln for drying barley for 'sattu' and an old furnace for smelting iron ore. The outer boundary has been slightly changed by shifting pillar 13 The compartment should be at once fire-protected and it should be inspected every March to see that the lopping rules have been respected No fuel-fellings will be required. Although open to grazing, thanks to the good reproduction, it can be worked for fuel after Hajawa 1 and 4½ and only two or three short paths will be required to bring the produce out, as it is already traversed by the Hajawa-Kandál road and in its upper portion by the Tons road. The lower rocky portion, which is a blank, can continue to be burnt Some unassessed fields are situated below pillar 10 belonging to Dhani-Ram of Kandál, and he may be allowed to cultivate them on payment of rent.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude	Rock and soil.	Stock.	Reproduction.	Treatment.
	7 and 8	209	Occupies the head-waters of the Hajawa gád here called the Gedi khad and extends southwards to compartment 4. Precipitous in places, especially along parts of the main ridge, near the stream and in the extreme south-east. Divided by numerous watercourses into slopes facing west and north-west on the right of the gád, south and south-west at its head, and north, north-west and east on its right bank	30° to 55°, average 35°.	...	The rock is limestone, the subsoil generally a stiff clay covered with a dark loose topsoil and with a thick covering of humus.	The upper portion of the Gedi khad has a dense crop of karshu saplings and poles right up to the top of the Tipra tiba. Large trees which are not numerous and are generally unsound are found lower down, where the stock changes to a forest of almost pure morinda mixed with some rai and deodár. On the right bank of the Gedi-khad the crop consists of morinda and rai with just a few deodár interspersed with almost pure patches of karshu beginning at the crest of hills and extending to some distance below the Tons road. Karshu occupies slopes facing the south, south-west and south-east, whilst slopes looking north, north-east or north-west are generally stocked with fir. Deodár, where it exists, is found on precipitous ground with a more or less southerly aspect. Large trees are not numerous, and those that exist occupy mostly the lower parts of the Gedi khad and ravines. There are also some moru and kokat at the bottom of the valley, but they are not numerous. The forest is usually very dense, and the stock of a good quality. Extensive blanks occur along and on both sides of the Tons road. These blanks are covered with grass, which is absent under the forest where there is a shrubby growth of willows, brambles, cotoneaster, honeysuckle, skimmia, &c., with herbs such as strobilanthes and balsams.	There is splendid reproduction all over the stocked portions that for karshu being almost complete, for fir very good and for deodár moderate, but some of the seedlings have been injured by grazing. Young ringal are also plentiful. The grassy blanks are skirted by fir and oak seedlings.	An old fuel road taps the Gedi khad and a one foot line which can be widened into a fuel path was cut this year. The karshu portion about the Gedi fuel path having an area of 48 acres should be worked as a coppice and formed into a separate compartment, Hajawa 8, *vide* the plan. Old trees were cut out of this portion in the past. The remainder although open to grazing can be worked for fuel after Hajawa 6, the advance growth being so plentiful.
Duliana ...	1	150	Consists of the lower portion of the right bank of the Khatwa gád as far west as a spur from the Moti dhar which meets the Suri kala some chains above its junction with the Khatwa gád. A pretty large nala runs through the middle and there are several dry and shallow water courses. The main dhár is sharp and rugged, but otherwise the slopes are moderate	30° to 45°, average 35°, but in the east and along the outer boundary 20° to 35°, average 30°.	...	In the upper portions limestone much developed along the Moti dhár and occasionally mixed with shales; in the eastern and northern portions friable blue and grey shales. The subsoil is a sandy clay up to three feet and much developed in the eastern and northern portions. The topsoil is a dark rich loam about a foot deep in the western half but shallow and in places altogether wanting in the east. Humus is only found in the higher and western	In the higher parts (over 79 acres) there is a forest of fir mixed with some moru, bán, and kokat. In the east and along the northern boundary moru and bán predominate over 46 acres, associated with some rai and the usual kokat. There is about an acre of young deodár near pillar 17, a few individuals of it mixing with the rai just above. The Banguthát chak of six acres, is situated near pillar 9, and grassy slopes extend along the Moti dhár, and down the slopes of a minor spur to pillar 15, being dotted in the lower parts with some bán and moru and a few rai along the edge of the stock. There is also a small blank on the dhár above pillar No. 18. The upper portion is well stocked, but along dhárs and in the lower part the forest is open, especially at easterly aspects. The little	Established young firs are found here and there in the higher portions; in the middle of the compartment rai seedlings up to 10 feet in height are common and are mixed with young moru on north-easterly slopes, whilst there are a very few kail seedlings here and there. Along and for some distance above the outer boundary reproduction is poor, being represented by moru, bán, ayar and burána seedlings, much damaged by excessive grazing and oc-	Trees for free grantees only will require to be marked. A small chak has been formed called Banguthat and two or three changes made in the outer boundary.

		and even those at the headwaters of the nala being steep in places General aspect northerly but easterly east of the dhar passing by pillar 15			portion.	patch of deodar is very well stocked There are a considerable number of mature firs and oaks, but the latter are much injured by lopping, the moru being also hollow. The quality of the younger classes is fairly good There is the usual growth of brushwood, ferns, strobilanthes, &c, under forest, and a dense growth of indigofera, desmodium, spiræa, prinsepia, brambles, &c, in blanks and along nalas. Ringal occurs in the higher and moister portions	curring more or less in patches.	
2	117	Contains the slopes on the right banks of the Suri khála as far down as compartment 1. It is traversed by a number of rounded spurs from the Moti dhár and some dry shallow watercourses With the exception of the rocky and rugged main dhar the slopes are fairly even. General aspect north-easterly	30° to 45° usually about 35° but up to 46° in places along the Moti dhar and as low as 30° along the higher part of the Suri khala	...	The rock is similar to that in compartment 1. The sub soil is a free clay overlaid with a dark rich loam up to two feet deep. There is a good deal of humus except in the grassy blanks.	A fir forest with the exception of a narrow strip of 13 acres along the Suri khala where moru, predominates, mixed with some rai and kokat. In the fir forest there are a so some oaks and kokat, morinda mixed with a little rai, karshu and moru predominating in the highest portions along the Moti dhár, and rai being the chief species lower down On northerly aspects where morinda predominates the density is very high, but in the rest of the compartment it is variable There are 20 acres of grassy blanks along the Moti dhár, and down a minor slope to the Suri khála, the latter blank being dotted with some rai. Most of the morinda consists of saplings and poles, but there are a fair number of mature rai and moru, which are confined, however, to the moist ravines, and are not universally distributed over the whole area. There are a few large karshu along the Moti dhar The quality of the stock is not very good, most of the trees being stunted and unsound, and a few of the rai are drying up. A good many of the moru are hollow and unfit for timber, but tall clean-boled trees are not uncommon along nalas. The undergrowth is in places very dense consisting of willows, brambles, honeysuckles, skimmia, daphne and a thick growth of ringals (now dead) is met with everywhere	Dense patches of morinda advance growth up to 10 feet in height, with seedlings tending up annual shoots a foot or more in length are met with in the upper portions where the cover is not too dense or lower down established young rai occur here and there in small groups, and the lowest parts contain moru seedlings of all sizes, but they are damaged by grazing Recent fir seedlings are generally wanting and and there is no reproduction where the leaf-canopy prevents the admission of sufficient light.	Trees for free grantees only will require to be marked
3	100	Situated in the extreme west of the block occupying slopes draining into the Gedi khad from the boundary of the Hajawa block eastwards to a newly-cut fire-line. The higher portion is a sheer wall of rock towering several hundred feet above the slopes below, and there are smaller, bare precipices all over the compartment making it very rugged General aspect south westerly	Omitting precipices, usually over 45° in the higher parts, and, in the lower 30° to 45° average 40°.	...	Limestone forming all the bare precipices. The soil where it exists is a dark, free, rich loam strewn with rocky fragments and in places three feet deep but absent along the steep dhárs and on precipitous ground In places bands of a sandy clay crop out to the surface There is no humus.	With the exception of two small open patches of six acres only of deodar, rai and moru, situated on a north-westerly slope in the eastern corner, the whole compartment is a grassy rocky blank, dotted with a few mature deodar, rai and moru in the lower half, but quite devoid of tree-growth in the upper portion. The mature trees are very branchy and unfit for timber. The ground is either bare or covered with grass and ferns with a few bushes of indigofera, desmodium and brambles, along the Gedi khad and in the stocked portions where there are also a few clumps of ringal.	Almost nil, save for a few deodar seedlings in the stocked patches and along dhárs in their vicinity.	A new fire-line has just been made and the compartment properly protected for the first time No trees should be felled.
4	448	Comprises the rest of the right flank, of the Moti dhár east of compartment 3. The ground is very rocky and rugged.	..	...	This compartment has not been valued as it is entirely a grassy rocky blank with only a few unsound scattered old bán in the east, where there are only one or two small patches of bán along nalas		*Nil*	To be kept as a grazing ground allowed and allowed to be burnt.

APPENDIX C.

Description of Compartments—(continued).

Names.	Number of compartment.	Area in acres	Configuration and aspect	Gradient	Altitude	Rock and soil	Stock.	Reproduction	Treatment.
Pandáwa ...	1	145	Comprises the slopes between the Pandáwa gád and a large tributary to south as far as its bifurcation and then a dhár leading up to Tipra Tiba. It is traversed by a few shallow watercourses, one or two of which contain water, and the dhárs are broad. The slopes are moderate and even. Chief aspect easterly, north easterly and south-easterly	In the upper parts and on some flat tops of dhárs 20°—30°, but along nalás and in some other places the gradient is as high as 45°. Average 35°.		Limestone mixed with a few beds of shales in the lower parts. The subsoil is a free, loamy clay strewn with fragments of rock and it has a free, dark, rich loam resting on it from a half to two feet deep and there is a thick deposit of humus in the stocked areas.	The higher portion or nearly half the entire area is a karshu forest mostly of the younger classes On easterly and north-easterly slopes the karshu extends lower down than on northerly and north-westerly ones where it is mixed with young morinda. Below the karshu zone there is a fir forest over 70 acres, and occupying a narrow slip along the Pandáwa gád; there is again oak forest, but here the species is moru associated with rai and a few deodár and sail. Kokát as usual, is met with along the nalas. The forest is fairly well stocked amongst the young trees or in the higher portions where fellings have not been made, but near the Public Works Department hut and the Limekilns and also along some of the dhárs and nálas in the lower part it is open, sometimes very much so The younger classes chiefly karshu and morinda predominate greatly, but mature trees are also pretty common, those of karshu being confined to the flat tops of dhárs, and those of the firs generally to the ravines; whilst some mature moru and deodar are scattered over the area affected by these species. Their quality is fair, that of the saplings and poles good Small blanks aggregating 12 acres and covered with strobilanthes, &c, occur here and there; they are probably the site of old "thátas" There is an undergrowth of brambles, willows, honeysuckles, viburnums &c, and ringals are found all over the compartment	A good advance growth up to 10 feet high of karshu and morinda occurs in patches in the upper part and recent seedlings of karshu with a few morinda are also coming up. Reproduction of rai is rather poor, there being only a few small groups of seedlings far apart In the lower part there are a good many moru and deodár established seedlings, the former being usually close to the parent trees On the whole reproduction is rather poor, especially on northerly slopes in the higher portions and along nálas.	As the upper portion which is stocked with oak has to supply fuel yearly to the Military Works limekilns it must be closed to grazing and the fuel must be in future delivered at the limekilns by this Department, and not cut by the military works contractor, as much damage is thereby caused to the forest. About a mile and a half of fuel paths will be required
	2	121	Contained between compartment and the Suri dhár. A prominent spur, an offshoot of the Suri dhár runs through its middle dividing it into two. In portions along the Suri dhár and on some of the grassy blanks the ground slopes very gently, but along the Pandáwa gád there is			As in compartment 1 ...	The eastern portion or more than one third the area, with the exception of a small area along the lower portion of the Suri dhár and extending down to the Pandawa gád, is a blank dotted with a few mature moru, bán and one or two rai in the lower half and devoid of all tree-growth higher up. There is also a small blank the site of a thát in the northern portion a continuation of one in compartment 1. The stock resembles that of compartment 1, there being a belt of karshu in the upper part, firs in the middle portion, morn in the lower, with the same mixture of other species. The	The higher grassy slopes along the Suri dhar have no seedlings, but on the open blanks in the east there are seedlings of all sizes of moru, rai and bán, and seedlings are also pretty generally found where moru predominates. In the rest of the compartment reproduction is similar to that in compartment 1	The upper karshu portion to be closed to grazing as in compartment 1. A number of mature karshu have been taken out for lime-burning and there are now very few that can be felled. About a mile and a half of fuel paths will be needed; two chaks have been marked off.

			some precipitous ground. General aspect northerly and north-easterly.				density also is almost the same as in the preceding compartment, though if anything a little higher. The younger classes form nearly the entire stock, the highest northerly slopes being almost wholly stocked with morinda saplings and poles. The number of mature trees is comparatively small and most of these are rai in the lower portions, many being tall and straight with long clean boles, but the large moru and some of the other species are hollow. The quality of the saplings and poles is very good. Undergrowth as in compartment 1.		
	3	138	Occupies the slopes on the left bank of the Suri khála. The whole compartment is broken up by bare rocky walls with some moderate slopes between, so that it has a rugged appearance. The chief aspects are south-east and east.	Excluding precipices 20°—45° in the western portion; 30°—45° in the eastern part; average 35°.	...	Limestone with different colored shales which are ferruginous in places. The subsoil is clay free in the higher but somewhat stiff in the eastern part where it generally crops up to the surface. It is mixed with a quantity of stones and usually has a very shallow loam resting on it. There is no humus.	With the exception of a small area in the eastern extremity the whole consists of grassy and rocky blanks devoid of tree growth except on the slopes above the stocked area, which are dotted with a few bán and moru. The stocked area which occurs along the gád and covers 27 acres consists principally of bán and moru the latter being confined to the moist ravines and contains an appreciable mixture of ayár, burána and kokát with just a few individual deodár and rai. The forest is open along these and about half stocked along nálas. There are but few mature oaks and they are both stunted and excessively lopped for fodder. The blanks are covered with grass and ferns whilst under stock there are brambles, barberry, sarcococca, &c.	There is no reproduction of any kind in the blanks, but a few bán seedlings near the forest, under which there are both established and recent seedlings of bán, ayár and burána, as well as a few moru near parent trees, but the young oaks are kept down by grazing. There is a small patch of established deodár seedlings in the middle of the stocked area.	Nothing required; a small chak has been formed called Kharsáli.
Rikta	...	1	178	Contains the slope from the main ridge between the Pandawa g'd and the dhár from Báthawa peak, which forms the watershed line between this gád and its large tributary the Ekari khála. It is traversed by one large and a number of small nálas all usually dry, and by several prominent dhár-, which are rugged in places with very sharp edges. The ground is also broken up breadth-wise by short bare almost vertical precipices. Aspects numerous, but more or less southerly ones predominate.	Excluding precipices 30° to 45°, average 40°.	...	Limestone in the higher parts and along spurs and shales in the lower parts and on easterly slopes. Covering the limestone there is a dry, free loam, fairly deep where it exists, whilst lower down there is a coarse and very sandy clay, both soils being very stony. There is just a slight amount of humus in the stocked portions.	Nearly the whole (157 acres) is a grassy, rocky blank and more than one-third of this area may be classed as unproductive. There are only two small stocked areas, *viz.*, (1), the upper sides of the large nala where there are ten acres of deodár, kawáhu and rai with a few morinda and kokát, mostly saplings and poles; (2) a narrow strip of eleven acres along the Pandáwa g'd stocked with moru mixed with some deodár and rai. In both these areas the forest is open and often very much so, and the quality of the stock is poor. The ground is immediately covered with grass and ferns and a few bushes of indigofera and desmodium along nálas and under forest. There are also a few clumps of ringal.	Very poor, there being only a few scattered seedlings here and there mostly deodár, rai, kail, kawáhu and moru in the blanks, together with a few patches of advance growth from 1' to 3' of the different species in the stocked portions.	Selection fellings of deodár to be made after those in Rikta 2, if any trees can be removed. Girdling of other species if necessary to be made in 1896.

APPENDIX C.

Description of Compartments—(continued.)

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Kikta	2	90	Occupies the slopes on the right bank of the Ekuri khála. Precipices crop up along the principal dhár and just below the Báthawa peak, while some other slopes are rather steep. General aspect south-easterly.	As in compartment 1		As in compartment 1	The greater portion (70 acres) is a grassy, rocky blank of which 22 acres may be classed as unproductive, dotted with a few moru near the stocked parts. The 20 acres which are stocked occupy a narrow belt of land along the Khála, the species forming the stock being moru with a little deodar and rai in the lowest part, deodar rai, morinda, moru and a little karshu higher up, the whole sprinkled with a few kokát, and finally a tiny patch of karshu just below Báthawa peak. The forest is very open and the quality of the stock is not good. Undergrowth as in compartment 1.	Under stock there are seedlings in every stage of growth of deodar, moru and karshu with some young firs, but in the blanks there is often no reproduction save some young moru.	Selection fellings of deodar to be made after those in Rikta 3 and girdling in 1896 if necessary.
	3	268	Comprises the remainder of the Rikta block from the Ekuri khála to the outer boundary. A high wall of bare, precipitous rocks in the upper portion close it in on the north and east, and smaller precipices are found here and there all over the compartment. General aspect south-westerly, but north-westerly, westerly and southerly aspects are not uncommon.	As in compartment 1, but gradients exceeding 45° are more frequent.		As in compartment 1, but there is a thicker layer of humus under stock.	More than three-fifths of the area consists of grassy, rocky blanks, dotted with moru, bán, and a few rai and deodar in the lower parts, but altogether devoid of any tree-growth in the upper portion and along the principal dhárs. The stocked area is situated wholly below the bare rocky precipices, though extending in places to the Rikta dhar. In the higher portions there is a forest of firs mixed with a few moru and deodár on westerly and south-westerly slopes, rai extending right down to the Ekuri khála along the khals; deodár, however, predominates, especially on south-westerly slopes; but along the lower course of the khála and along the Pundáwa gád moru is the chief species. There are a few karshu below the Báthawa peak and the usual kokát occur everywhere, being common along ravines. The forest is much better stocked than in the other two compartments, being dense on north westerly slopes in the higher parts, but open along dhárs and also in many places in the detached pieces of forest in the south, and, on the whole, it is a great deal more than half stocked. There are a large number of saplings and poles, but there is also a fair number of mature deodár, rai, moru and bán; the conifers, however, are of a somewhat indifferent quality and the oaks are badly-grown, knotted and somewhat stunted. The undergrowth is similar to that in compartment 1.	A dense though patchy advance growth of morinda mixed with established seedlings of rai is found in the highest stocked portions save where the cover is too great. Deodár reproduction is fairly good along the Ekuri khála and on westerly and south-westerly slopes, and there are some moru, rai and bán seedlings in the lower portions. As a rule there is no reproduction in the grassy blanks, but there are a few rai and kail seedlings in the south-east.	Selection fellings of deodár to be made after those in Konain 3, and girdling to be undertaken in 1896.

Bajamára ...	1	195	Comprises all slopes above the Konain road between the Khopti dhár and a prominent ridge coming down to the road from near the Kharsawa chauki. It is deeply cut up by numerous nalas and dry watercourses alternating with steep and rocky minor spurs. Parts along the main ridge are full of bare and precipitous rocks, and the whole compartment is rugged, although well covered with trees. Main aspects northerly and north-easterly.	Usually 45°, but above this along dhárs though in places as near the Kharsawa chauki as low as 30°	...	Limestone everywhere predominates associated in places with shaly beds. The soil is a somewhat dark loam, free and rich but shallow, and wanting on rocks. Humus of variable depth occurs in the stocked portions.	A fir forest mixed with a considerable number of deodár as well as some kail, karshu, moru and kokát. Rai is the most numerous of all the species and it is mixed with deodár to within a few chains of the main ridge. Deodár predominates in the west where it is associated with kail; karshu, mostly saplings and poles, occupies the main ridge and goes down the slopes for about eight chains near the Kharsawa chauki, whilst a sprinkling of moru occurs everywhere. Kokát, consisting of horse chestnut, maples, willows, euonymus, kathbhoj, and a few bhojpattra, is very abundant along the nalas. Some north-easterly and easterly slopes in the western part are more or less open blanks with clusters of deodár and kail on them, and there is no tree-growth in the beds of nalas, due evidently to snow. The forest is dense on northerly and north-westerly slopes, but is very open along the Khopti dhár and on some north-easterly slopes. The younger classes greatly predominate in the higher parts, but 1 class deodár, kail, rai, morinda and a few moru are not wanting in the lower parts along nalas, the deodár being the most numerous although usually unsound. Trees at the higher altitudes are short and unsound, but on northerly slopes in the lower parts and along nálas there are some fine rai. In the open there are ferns and grass and a thick growth of brambles, barberry honeysuckles and other brushwood. Dead ringal are to be found everywhere.	In the west there is good reproduction of kail and deodár, there being patches of seedlings from a few inches to 10′ in height wherever there are openings; seedlings of rai, deodár, some moru and kokát are also met with in the east, but in the higher parts where the forest is dense there are only some small patches of advance growth of morinda and just a very few young rai; some karshu seedlings occur along the main ridge.	To be worked for fuel after Kutnidr 2. Nearly two miles of fuel paths will have to be made.
	2	100	Consists of all the slopes in the block below the Konain road. The dhárs possess steep sides along the Konain road and the sides of some of the nalas are precipitous, but otherwise the slopes are moderate although cut up by numerous nalas and dhárs. Predominating aspects northerly, north-easterly, and north-westerly.	30°—45°, average 35°, but 45° on the right of the Khopti dhár and the Dingwa nála	...	As in compartment 1. A hard, brittle rock breaking into angular fragments crops out along the top of some of the dhárs, and limestone in the form of large, white semi-transparent crystals is found near pillar No. 15.	About half the area consists of open blanks dotted with individual deodár, kail, rai and a few oak. The western portion as far east as pillar No. 14 is stocked mostly with saplings and poles of kail intermixed with deodár, rai, moru and a few mature bán. East of pillar 14 the stock occurs more or less in patches occupying north-westerly and northerly slopes and consists mostly of rai, moru and kokát, such as horse-chestnut, willows, kathbhoj, Prunus Padus, &c., which line the nálas. There are a few walnut trees here and there. On the whole the stock is poor and patchy, the trees being small and much-branched, though some fine rai and deodár exist along the nálas. The stocked part is open on easterly and westerly slopes but denser on more or less northerly ones.	There is very fine reproduction of kail mostly advance growth all over the compartment, but especially in the west, and it is mixed with deodár seedlings of all sizes. Dense patches of young moru are common near parent trees and some established bán seedlings are also met with in the lower portions and on easterly and westerly slopes. There are only a few established rai seedlings at great intervals.	To be worked for fuel after Bajamára 1. About a mile and a half of fuel paths will be necessary. Not a very large number of trees can be cut out. Cleanings amongst the young kail to take place in 1895 and subsequently at intervals of five years if possible.

APPENDIX C.

Description of Compartments—(continued)

Name of block	Number of compartment	Area in acres	Configuration and aspect	Gradient	Altitude	Rock and soil	Stock	Reproduction	Treatment.
Bajamára	3	123	Comprises all the slopes above the Konain road between compartment 1 and the Leguna block It is furrowed by deep water courses and is cut up by steep dhars, whilst there are several ledges formed by bare and precipitous limestone rocks. Main aspects westerly and north westerly	Usually above 45°, but gradients of 30° to 45° also occur	..	As in compartment 1, except that the limestone is more developed and the soil is often wanting	A fir forest mixed with some deodár, karshu and kokat with a small sprinkling of moru along the nalas and of kail on westerly slopes in the lower parts, where there are also some walnut. Karshu occurs along the main ridge, extending downwards for two or three chains wherever the slopes face west, whilst the higher portions facing north and north west are occupied by more or less pure morinda, mostly saplings and poles like the karshu. Rai is found almost everywhere and predominates on northerly and north westerly slopes in the lower half, and there are a fair number of mature trees. Deodar affects chiefly the precipitous westerly slopes, though individual trees are not uncommon in the lower north westerly slopes Kokát, as in compartment 1, is plentiful along the nalas The westerly slopes on the right of the Dingwa nala are open blanks dotted with mature deodar and moru, whilst the beds of a few nálas as well as the precipitous rocks are unproductive blanks. The northerly and north westerly slopes are well-stocked, but westerly slopes are often very open. On precipitous westerly slopes the karshu are stunted and the deodar are much branched The firs are tall and straight and many of them have long clean boles Dead rungal is found throughout	Karshu seedlings of all ages but usually stunted. There are a few deodar and rai seedlings here and there, but advance growth of morinda mostly in patches is common in the highest portions. Advance growth of kail is common on westerly slopes, and patches of moru seedlings exist here and there near parent trees, but on the whole reproduction is backward.	To be worked for fuel after Bajamára 2 A mule and a half of fuel paths will have to be made Fuel from the highest portion can probably be exported and the Tons road, but the rest should go and the lower Konain road
Legúna	1	97	Comprises all the right bank of the Daura and below the fire line and some precipitous ground along the Gatai gád The slopes are steep and in places precipitous being broken up by outcrops of the underlying rocks. Aspect south westerly	30° to 45°, average 35°		Limestone occurs along dhars in the higher portions, but lower down there are hard blue and grey shales overlying a very hard, quartzose rock which occupies the lowest parts and crops out occasionally along dhars The soil is poor and shallow, consisting of broken pieces of the underlying rocks mixed with a little loam and clay	With the exception of a small patch of four acres of ban, burans and ayar near Wara tách, the whole area is a grassy, rocky blank dotted with a few solitary trees far apart from each other of deodar, chir, kail rai, moru, ban, burans, ayar and kokat. Most of the compartment is covered with grass and some brushwood along nalas	Nil	To be kept as a grazing ground

2	157	Occupies the whole of the left bank of the Gatai gád below the Konain road, except the small area of precipitous ground included in compartment 2. Even, moderate slopes with a little precipitous ground along the g d. Main aspect northerly.	20°—25°, but 40° in places towards the Konain road; average 30°	...	The rocks are the same as those in compartment 1. The sub-soil is a deep, sandy clay, whilst along nálas and generally in the stocked area there is a dark loam which becomes shallow towards the west. In the upper half the soil is covered with humus up to six inches in depth.	Very variable, more than one-third, mostly in the lower half, being grassy blanks dotted in places with individuals of the species forming the stock The e blanks include some fields now lying fallow called Obri and Thuwa In the lowest part there are 12 acres stocked with burán and ayár mixed with bán and kail. In the middle portion, over 69 acres, there is a forest of kail mixed with some deodar, moru, bán, and a few rai on northerly slopes. The highest part (12 acres) contains rai with some deod r and moru. A large proportion of the stock consists of saplings and po'es, mostly of kail and deod r, whi'st there are a good many mature bán, moru and rai. The few large deodár and kail are scattered here and there The forest is often very open, but is rapidly improving in the kail and fir forest. There is grass in the lower parts and the usual brushwood in the higher portions, together with a rank herbaceous growth of strobi'anthes, &c., during the rains. Ringals are only found in the highest parts.	There is splendid advance growth of kail, deodár and moru in the middle portion, there being se dlings of every age and some patches are very dense, the young plants growing vigorously There are also some deodar and kail aced ings e'sewhere, whilst those of b n, ayár and burán are pretty common in the lowest parts, though the first is damaged by grazing	To be worked for fuel after Bajamára 3. The whole to be brought under fire protection by burning the fire line down the Joatra dhár to the gad. The patches of cultivation now lying fallow have been exchanged for land in Karáli and for money, which has yet to be disbursed Fuel paths about a mile long will have to be made The progress of the young kail and deodar must be watched and certain areas added to the scheme for c'eaning kail as given in para
3	193	Occupies the right bank of the Gatai gád below the lower Konain road. It is cut up by several nálas and by dhárs from the Suro dhar, some of which are sharp-edged with steep and rugged sides.	30° to 45°, average 40°.	...	Limestone occurs in the higher parts and along the dhárs, but lower down along the Gatai gád shales of various colors abound The sub-soil is a sandy clay, deep in places but wanting on precipitous ground The top soil is a loam, fairly deep and rich on northwesterly slopes under stock, where it is covered with a layer of half-decomposed deodar needles.	Including the large Konain chak more than two-thirds consist of blanks, the remainder consisting of patches of various sizes of deodár saplings and poles mixed with bán, burán, ayar and kail along the Legúna gad and the Konain chak on westerly slopes, and with rai and moru at northwesterly aspects The small patches of forest west of the chak are almost pure young deodár with just a few bán. The open blanks between the patches are in places dotted with bán, deodar and kail. A few kokát, walnut, burán and ayar are scattered here and there The few mature trees that exist are scattered all over the compartment both in forest and blanks. The forest is often very open and is only dense amongst patches of saplings and poles. The mature trees are much branched and badly grown. There is grass in the blanks, desmodium, honeysuckle, brambles, strobilanthes, &c., in the stocked area and indigofera everywhere.	East of Konain chak there is a fairly good advance growth of deodar and kail generally found in patches. The established seedlings are vigorous and recent ones are also coming up. West of the chak there is also some advance growth of deodar near the small patches of forest, but otherwise reproduction is *nil* There are very few young rai, and although there are some oak seedlings, they are damaged by grazing	Nothing to be done A large chak, Konain, has been formed in the westerly part.
3	193	There are some small precipices in places Predominating aspect south-westerly						

APPENDIX C.

Description of Compartments—(continued).

Name of block	Number of compartment	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Legúna	4	223	Comprises all the ground between the upper and lower Konain roads from their junction westwards to the Bajamára block. It is cut up by a number of nálas and smaller water courses, some of the former containing running water. The steep slopes become precipitous in the west just above the lower road, forming rocky walls. Every aspect is represented, but the greater area faces more or less north.	In the upper portions and in the western extremity 45° and over; elsewhere 30°—40°; average 35°.	...	Limestone with thin strata of a soft blue shale here and there. A sandy clay in places crops out to the surface and has a dark, rich loam from 1' to 3' deep resting on it. There is a pretty thick layer of humus on well-stocked areas, but none on southerly and south westerly slopes.	More than half the area all on the western side is stocked with firs, morinda predominating in the higher and rai in the lower portions, where there is a mixture of deodar, which are most abundant on more or less southerly slopes. In this forest below the precipitous ground in the west just above the road there is a small blank, dotted with mature deodár, kail, and rai and there is a large blank below the Bagerú láni containing a few cherry trees, P. Padus, while there is no tree-growth in the beds of nálas. Karshu occupies the highest peak and extends along the ridge for a width of four or five chains down to the Bagerú láni on north-easterly and north-westerly slopes. The remainder to the north of the nála which rises near the Tipra tiba, contains a number of blanks dotted with mature deodar, kail, bán and rai interspersed with patches of deodár mixed with rai, kail, bán and moru. A large number of kokát such as bird-cherry, maples, horse-chestnut, willows, kat-bhoj, euonymus, &c., are scattered all over the compartment. There are but few mature trees and those chiefly rai, the greater part of the stock being composed of saplings and poles especially deodár, kail, morinda, karshu and kokát. The forest is open on westerly and south-westerly aspects, dense on northerly slopes. There are some fine rai, morinda and deodár with long clean boles on northerly slopes and along nálas, but at unfavorable aspects the mature trees are much branched. A large proportion of the large karshu and kokát as well as some of the other species are unsound. With the exception of the blanks in the west and north where grass only covers the soil, there is a brushwood of brambles, willows, honeysuckles, barberry, ferns, &c., and a dense growth of strobilanthes during the rains. Ringals are plentiful everywhere.	In the western and northern parts there is a sufficient number of kail, deodár and moru seedlings, both established and recent ones occurring in patches, and also scattered over the areas referred to. Elsewhere reproduction is rather backward, there being a few established seedlings of rai in the lower and of morinda in the higher parts. There are a sufficient number of karshu seedlings, however, along the main ridge and a few recent ones along the upper Konain road.	Fellings for fuel to be made after those in Legúna 7. Two miles of fuel paths leadings towards Bagerú láni will have to be made.
	5	155	Included between the Tons and the upper Konain road as far north as the boundary of the Konain block. It is broken up by sheer	Excluding precipitous ground over 45°, the gradient varies from 30° to 45°; average nearly 40°.	...	Limestone with occasional beds of a soft blue shale. The sub-soil is a fairly deep sandy clay with a rich dark loam up to a depth of three feet resting on it.	About one-third of the compartment consists of blanks dotted with mature deodar, rai and a few moru. These blanks are generally met with on south-westerly and southerly slopes below the Tarrára tiba and another peak near the Public Works Department hut. Of the stocked area, 64	Better than in the preceding compartment. Splendid patches of advance growth of deodár and kail are met with on westerly aspects and in the	To be worked for fuel after Legúna 4. About a mile of paths will have to be made towards Bagerú láni.

		walls of bare limestone rocks from end to end, which gives it a very bleak appearance. The aspects are very variable, but the predominating ones are westerly and south-westerly.			on northerly and north-westerly slopes which is itself covered with a layer of humus from ¼′ to ½′ deep. All soil is absent on precipitous ground.	acres, mostly with north-westerly and northerly aspects, is a forest of firs associated on the lower parts with deodár and moru. The westerly slopes, which alternate with open blanks on south-westerly and southerly aspects, are stocked with deodár, moru and kail mixed with a little rai and in the higher parts with some karshu. The highest portions along the Tons road and the main ridge contains a more or less pure karshu forest mixed with a little morinda. Similar kokát to those in compartment 4 are scattered about everywhere and are abundant along the nálas. The forest is dense on northerly and north-westerly slopes, more open and often very open on westerly ones. There are very few mature trees, those of deodár being much branched and growing mostly on precipices, and those of karshu on the flat tops of ridges. There are a few fine firs and karshu on the slope opposite Tarrára tiba. A very large proportion of the stock consists of saplings and poles of deodar, kail, rai, morinda and karshu. In the more open parts the slopes are covered with grass and ferns, whilst under forest there is the same brushwood as in compartment 4. Ringals are abundant.	karshu area there are seedlings of that species of all sizes. Rai seedlings are rare, but small patches of established young morinda occur near the upper limit of that species. There are some recent seedlings on slopes facing the west and on blanks, but they are almost wanting at northerly aspects.	
6	39	Comprises the slopes above the Tons road up to the main ridge. The northern half is full of bare precipices, rising up almost vertically above the Tons road. General aspect westerly.	In the north above 45°, in the south 20°—40°, average 30°.	...	As in compartment 5 ..	A karshu forest with some fir, generally on north-westerly slopes, in the west. A few kokát bird-cherry, maples, &c., are found along nálas and one or two deodár, kail and yew along the road. Saplings and poles predominate, mature trees of karshu being met with on the gentler slopes and those of the firs along nálas. The precipices are bare or contain only a few scattered and stunted karshu. The grassy blank in the south is the site of a "thát" where sheep are kept during the rains. The density is extremely variable and quality of the stock very indifferent.	Very poor, there being only a few established karshu seedlings and still fewer kokát here and there, those that exist not being of a good quality.	To be worked for fuel after Legúna 5. No roads will be needed.
7	60	Comprises that portion of the right bank of the Daura gád called here the Dingwa nála between the lower Konain road and the firo, line. It is cut up by two or three small water-courses and some small, bare, precipitous rocks crop out in the middle and along the gád. General aspect north-westerly.	25° to 45°, average 40°.	...	As in compartment 2, Bajamára.	Slopes with westerly and south-westerly aspects consist of open blanks dotted with mature bán, moru, kail, &c., or devoid of tree growth as some near the Martikri nála. The remainder is stocked with moru, bán, rai, kokát, kail and deodár mixed together. There are a good many mature deodár, kail, rai, moru and bán, but the conifers are much branched and often unsound. The forest varies much as regards density, is sometimes very open, and on the whole is less than half stocked.	As in compartment 2, Bajamára.	Fellings to be made for fuel after those in Legúna 2.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
Konain ...	1	40	Consists of the small area of first class forest below the path which leads to Konain from pillar 20 to pillar 25. It is cut up by two large nalas and some smaller ones rising in compartment 2. There is only a little precipitous ground in the south; main aspect southerly	30° to 35°, average 40°, over 45° along the sides of nálas.	..	Limestone in the higher parts, grey and bluish shales in the lower. The sub-soil is a sandy clay mixed with rock fragments wanting on precipitous ground, but elsewhere fairly deep with a thin layer of loam resting on it. On stocked areas there is a slight layer of undecomposed deodár needles.	The lower half is a grassy blank without any tree growth on it. The remainder is covered with almost pure deodár, there being trees of all classes, although saplings and poles predominate everywhere. The forest is very open on dhárs but fairly dense on south-westerly and south-easterly slopes. The mature trees are much branched and knotty, but the younger classes are vigorous and of a very fair quality. Grass usually covers the open slopes and there is an undergrowth of brambles, barberry, prinsepia, indigofera, &c.	There is a tolerable sprinkling of deodár seedlings of all sizes up to 12 feet all over the compartment except in the lower blank portion. They are most abundant at south-westerly and south-easterly aspects, but rare along nálas, where the forest is dense. This advance growth occurs in patches of variable density. Recent deodár seedlings are met with along dhárs or on slopes, where the grass is comparatively thin	Selection fellings of deodár to be made after those in Konain 8. Blank area to be planted up in 1896, if Bodiár has been completed by that date. It will have to be fenced, being close to the village of Konain.
	2	105	Comprises the left flank of the Suro dhár above compartment 1, and from pillars 20 to 25 of the I class boundary eastwards to a spur from pillar 36 to the Suro dhár. It is cut up by a number of small nálas, and by bare precipitous rocks sometimes forming walls and giving it a very rugged appearance. Prevailing aspect south-westerly	Excluding precipices 30°—45°, average 35°. There are some gentle slopes just above the rest-house.		Limestone with in places beds of grey friable shales cropping out along dhárs. The sub-soil is a stony, but deep clay and has a free, brownish loam resting on it from ¼ feet to ½ feet deep. There is no soil on precipitous ground, and there is only a very thin layer of humus under stocked areas.	Nearly two-thirds consist of open blanks dotted with mature deodár, whilst on south-easterly and south-westerly aspects there are patches of more or less pure deodár with very few kail and rai, bán and moru, the largest patches being situated just below the Konain bungalow and near the eastern boundary. Saplings and poles form most of the stock, mature trees being situated mostly in the open blanks, where they are knotty, much branched and not tall, but the other classes, especially the IV and V class trees, are healthy and vigorous. The patches of forest are often very open and but seldom very dense. The ground is chiefly covered with grass and ferns, with bushes of indigofera, brambles and barberry along nálas and scattered over the whole area.	There is very good advance growth of kail mixed with established young deodar along the Suro dhár just above the bungalow. Elsewhere there is very vigorous advance growth of deodár in patches, but some slopes facing the south and south-east possess few seedlings or sometimes none at all. Ten acres have been planted up, but the transplants are now so large and vigorous as to be undistinguishable from self sown seedlings.	Selection fellings to be made, after those in Konain 1, but very few trees fit for timber will be obtainable. The blanks should be planted up in 1907 after those in Konain 1 and 7.
	3	50	Occupies all that part of the 1st class forest above compartment 2 and above a path separating it from compartment 4. The portion on the left flank of the Suro dhár is very bleak and rugged, being broken up by a	On the left flank of the Suro dhár over 45° in the upper parts, but lower down 30°—45°, average 35°. On the right of this dhár 30°—40°, average 35°.	..	Limestone with some shales near pillar 36. On the left flank of the Suro dhár the sub-soil is a sandy clay fairly deep along nálas, and on the main dhár but wanting on precipices. The top soil is a free brownish loam from ¼ to ½ feet deep. On the right of the Suro	With the exception of very small patches of deodar occurring here and there on the tops of precipices and along the Suro dhar and some of the minor spurs the whole area on the left flank of the dhár is a grassy blank dotted with a tree here and there along the edge of the stocked patches. To the right of the dhár there is a fir forest with a sprinkling of deodár, yew, and kokát such as bird-cherry, willows, kat-bhoj, &c., morinda predominating everywhere, but consist-	On the left blank of the Suro dhár there are a few scattered kail and deodár seedlings along the dhárs, but over most of the area there is no reproduction. To the right of the dhár there is good advance growth from 10 to 12 feet high of deodár, morinda and other species	Selection fellings of deodár to be made after those in Konain 2, but scarcely any trees will be found fit for timber. Blank areas to be planted up in 1908 with kail and deodár if the rest of the plantation scheme has been car-

		number of bare precipices often forming rocky walls. Its main aspect is south-westerly. The portion on the right of this dhár contains no precipices and possesses rather even slopes facing the north.			dhár the soil is a dark, rich, moist loam from ½ to 2 feet deep and covered with a thick layer of humus.	ing mostly of saplings and poles. The deodár patches are open, and the trees of inferior quality, but the fir forest is dense and the trees of good quality. On the left flank of the dhár the covering of the soil is the same as that in compartment 2 in the fir forest of indigufera, desmodium, brambles, honeys-uckles, &c., with a dense herbaceous growth of strobilanthes, &c., during the rains, and ringals are common.	throughout, but the reproduction of rai is not good though established seedlings of it are not wanting	ried out cattle will then have to be excluded. Girdling to be done in fir portion in 1889 where necessary and again in 1904.
...	4	56 Occupies all the right flank of the Suro dhár below compartment 3 down to the Konain-Mundali road. There are some shallow water-courses, and there is no precipitous ground except in places along the Suro dhár. Predominating aspect northerly.	Near compartment 3 over 45°; in the middle portions 30°—45°; average 40°; further west 85° and near pillar 20 nearly level.	...	Limestone much developed along the main dhár and the sides of nálas. The sub-soil is a loose, sandy clay from 1 to 3 feet deep and covered with a layer of humus, except in the few grassy blanks.	Deodár mixed with rai in the upper half, the latter species predominating on some small northerly slopes and along nálas, whilst in the lower half rai becomes rare, but kail is abundant and predominates in some patches. A few morinda, mostly saplings and poles occur near compartment 3, whilst scattered trees of moru and kokát are found here and there all over the compartment. There is no tree-growth in the beds of nálas in the eastern part 7 and near the bungalow there is a small chak of cultivation; small open blanks also occur on north-easterly slopes, but most of them have been planted up. The density is very variable, being usually high where the younger classes abound and very open where there are mostly old trees. The number of mature trees is very small, most of the stock being formed of saplings, poles and III class trees. The mature firs in the upper parts are tall with long clean boles, but most of the deodár and kail branch from the base and are full of knots. The younger classes, however, are very promising. The covering of the soil is similar to that of the next compartment.	Fairly good, there being seedlings of all sizes and of all species up to a height of 10 feet and over. Young deodár and kail are more abundant than young firs, solitary seedlings of which are only found here and there in the upper parts. Some more seedlings are also met with close to the parent trees. The open and grassy blanks have been planted up, with deodar and kail and the transplants are growing vigorously.	Selection fellings of deodár to be made after those in Karamba 4. Improvement fellings (the fuel to be taken to Chakráta) should be made in 1890. Cleanings amongst young kail to be made in accordance with para. 177.
	5	100 Occupies the slopes between the Konain-Mundali road and an ill-defined cattle track separating it from compartment 6 of the Siari block to a minor dhár between pillars 2 and 3, separating it from compartment 7. Steep along sides of nálas, but most of the slopes are moderate and even. General aspect northerly	30° to 40°, but up to 45° along sides of nálas.	...	Limestone associated with a few beds of shale. The soil is similar to that in compartment 4.	Deodar is found everywhere except along the nálas and on small northerly slopes in the upper part which are stocked with rai, moru and a few deodár and kail, rai is chiefly confined to the upper and kail to the lower parts, but moru occurs everywhere, being abundant at the lowest elevation, where there are also a few bán; kokát is not abundant and is confined to the nálas. The bed of the large nála in the east is devoid of trees and small open blanks are generally to be found on more or less easterly aspects below the Konain, Mundáli road and along the norther boundary. These blanks are mostly dotted wit' mature kail, deodar and bán. There is a fai proportion of mature trees, but those of deod r kail and rai are rather branchy whilst the mori are unsound. The saplings, poles and young trees are fairly good. The forest is open along dhárs and on westerly and south-easterly slopes, but fairly dense on northerly and north-westerly ones. There is grass in the open and where the leaf canopy is very open, but otherwise there is a dense growth (of brambles, barberry, indigofera, desmodium, together with strobilanthes and other herbs.	Poor for rai there being a few established seedlings scattered here and there in the upper portion. There are young deodár of all ages occurring in abundance on north-westerly, westerly and north-easterly slopes, but absent under dense forest. There is a splendid advance growth of kail mixed with deodár in the lowest parts. In some open blanks these kail seedlings are in patches often of great density. Young moru of all ages exist near parent trees along dhars and at westerly aspects. Most of the blanks have been filled up with deodár, the transplant thriving as well as self-sown see dlings.	Selection fellings of deodár to be made after those in Konain 4, and improvement fellings also after those in Konain 4. About two miles of fuel paths will be required. No oaks should be cut for fuel for Chakrita, but, kept for lime-burning. Cleanings amongst young kail to be made in accordance with para. 177.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect	Gradient	Altitude.	Rock and soil.	Stock	Reproduction.	Treatment.
Konain .	6	18	Consists of the small area below the grazing path bounding compartment 5 to the boundary of the I class forest. Its configuration and aspect is similar to that of compartment 5.	30° – 45° and in places over; average 35°	.	As in compartment 5 .	The bed of the nála in the east is devoid of trees, and open blanks extending from compartment 5 exist on the tops of dhárs and on north-easterly and easterly slopes. The rest contains moru and bán with a few deodar, kail, rai and kohát, the rai occurring chiefly along the nálas, and the moru being most abundant in moist shady ravines. The forest is very open along dhárs, and near blanks, but is denser on northerly and and north-westerly slopes. The mature kail deodar and moru are of inferior quality. The undergrowth is similar to that in compartment 5.	There is good advance growth of kail along the tops of dhárs and in blanks, whilst deodár seedlings of all sizes are also common except on northerly slopes and in nálas. Young moru are plentiful near the parent trees, but bán seedlings are scarcer and are much browsed. The blanks have been planted up with deodár.	Selection fellings of deodár to take place after those in Konain 7 after any trees are available. Girdlings amongst the firs to be made in 1889 and 1904 but no oaks should be killed. Open to grazing.
	7	134	Comprises all the slopes in I. class forest to the west of compartment 5, below the Konain Mundali road as far down as a wide footpath from Konain to Jai Khera, it is traversed by a number of flat-topped dhars and dry, shallow watercourses. The peak on the north-west corner has rather steep slopes, while the slopes on the old Barai field are very gentle. Main aspect north-east.	With the exceptions noted 30°—40°, average 35°.	...	Mainly limestone. The sub-soil is clay, stiff in places but usually sandy and mixed with stones. The top soil is a free loam up to two feet deep in ravine- and moist places but either wanting or very shallow on dhárs and precipitous slopes. There is a thin layer of half-decomposed needles under stock.	Open blanks cover about half the compartment chiefly on north-easterly and easterly slopes but sometimes on westerly ones as well. The other half is a deodar forest mixed with kail, and just a few others species especially bán in the lowest portion on slopes facing the east. Kail and deodár saplings and poles form most of the stock, growing together in dense, almost impenetrable patches along the western boundary. The few mature trees are scattered amongst the saplings and poles or on the open blanks and are, as a rule, much branched and quite unfit for timber, the quality of the younger classes being much better. The open blanks have some scattered mature bán and kail, or as is the case over large areas have no trees on them at all. The young forest is usually dense and occasionally completely stocked, but elsewhere the stock is rather open. There is the usual heavy brushwood and also some ringáls in the higher parts.	Splendid where it exists, the advance growth being in dense patches consisting mainly of kail and deodár, the young plants throwing up annual shoots up to 3 feet. Recent seedlings are also common along dhárs and on flat ground not covered with brushwood. In the lower part established young bán are common, but they have been injured by grazing. There are no seedlings in the blanks covered with dense brushwood. A part of the blanks has been planted up with deodár.	Selection fellings of deodár to be made after those in Konain 5, and improvement fellings after those in the same compartment, but no oaks should be cut for fuel for Chakrata. Cleanings amongst the young kail to take place according to the scheme in para. 177. Blanks to be planted up in 1906. Strict orders should be given to stop cattle-trespassing in this compartment.
	8	26	Occupies the lowest portion of the block below the path from Konain to Jai Khera. The western dhárs are sharp-edged and rugged with steep sides, and near pillar 13 on the site of old cultivation the	Usually 30° to 45°, average 40°.	..	As in compartment 7	Ten acres consist of grassy blanks mostly on westerly and easterly slopes, whilst the remainder occupying northerly, north-easterly and north-westerly slopes contains patches of deodár and kail saplings and poles with a few rai along nalas, and bán on north-westerly and north-easterly slopes, the patches alternating with open grassy blanks. The stock is rather poor, the few mature trees which are scattered mostly	Good all over the compartment, there being seedlings of all species and of all sizes up to 12 feet growing vigorously. Bán seedlings though common are injured by grazing but it cannot be said that the conifers have suffered seriously from this cause	Selection fellings of deodár to be made after those in Konain 6 and girdling of firs &c, in 1889 and 1904, but no oaks should be killed. Cleanings amongst young kail to be carried out according to

			slope is gentle General aspect north-west				over the blanks, being much branched and fit only for fuel, but the saplings and poles of deodár and kail are vigorous and are found in dense patches on the gentler slopes The density of the young forest is sometimes complete, but where the older trees prevail it is very slight The soil is mostly covered by grass and ferns with some brambles in moist, shady places.	The blanks are well covered with kail and deodár seedlings up to 4 feet in height	the scheme in para 177. Open to grazing
Karáli	1	22	Situated between compartment 8 Konain, the figa line and a prominent dhár from pillar 62 to the Seli gád. It occupies the slopes of a number of small, but somewhat rugged dhárs, and is cut up by three or four small watercourses Chief aspects northerly and northwesterly	35° to 45°, but usually about 45°.	..	Limestone with a few beds of a friable blush shale in its the lower portions The sub-soil is a sandy clay rather shallow along dhárs and on steep slopes but fairly deep along nálas. It is overlaid by a thin layer of loam and under stock there is a slight quantity of humus.	Half the area is taken up by open blanks dotted with mature bán, deodár and kail. The stock occurs along nálas and on northerly slopes It consists of bán and a few moru mixed with a good number of deodár trees of all sizes and with a smaller number of kail, rai and kokát; there are a few chír, burúns and ayár in the lower portions on north-westerly and north-easterly slopes. On the whole the stock is poor, though the proportion of mature trees is fair The forest is very open along dhárs and near blanks but half stocked along the nálas. Grass and ferns cover the blanks, whilst there is a brushwood of indigofera, brambles, barberry, wikstrœmia, &c., along nálas and under stock generally There are no ringals.	Good for deodár and kail, the seedlings of which occur all over the compartment including the blanks, but they are more or less in patches. Seedlings of bán and moru are also common, though they have been much damaged by grazing, but young rai are very rare	Nothing required.
	1a	151	Contains the slopes below the Konain block and Karáli 1, down to the outer boundary as far west as the Gajrár ki dhár. Most of the large Jai khera and Gajrár chaks are in this compartment Some of the slopes are steep and the sides of the larger nálas are, as a rule, precipitous. Bare precipices also crop out here and there Prevailing aspects northerly and north-easterly	35° to 45°, and in places over, not including the chaks.	...	Limestone with beds of various-colored shales. The sub-soil is a sandy clay rather shallow on slopes and wanting on precipices. The top soil is a free, dark loam deepish on gentle slopes and in the shallow beds of nálas. There is no humus.	More than half the area is occupied by the Jai khera and Gajrár chaks and grassy blanks on slopes facing the east, south-east and west and along dhárs, dotted here and there with a few deodar, kail and bán down to Rainj village and below this village with bán and chír. The stock is mostly confined to more or less northerly slopes and to the sides of nálas It consists in the order of predominance of bán and moru, deodár, kail, kokát, chír, ayár, burúns and rai. The small portion above Jai khera is occupied by moru and bán mixed with kail, deodár and rai as well as with some horse-chestnut and other kokát. West of Jai khera moru becomes rare or ceases altogether, bán predominating everywhere except in the case of some very small patches of deodár, saplings and poles. The bán is associated with deodár and kail near the Konain block and with kokát such as Cornus capitata, Cedrela serrata and Picrasma along the nálas as well as ayár and burúns. A few chír are scattered in the lowest part The stock is usually extremely open, and the forest is almost nowhere half stocked. The number of I class trees is about 400, but the deodár and kail are much branched and are nearly all quite unfit for timber, but there are a few fair chír. The bán, ayár, burúns, &c., are crooked and excessively lopped. Undergrowth as in compartment 1.	Good for deodár and kail, in higher parts and near the Konain block, whilst established young bán are common along the nálas. There are also some patches of moru advance growth east of Jai khera but there are no seedlings in the grassy blanks or at the best only one here and there at great intervals. The young oaks are much browsed down by cattle.	Should be brought under fire protection. A Chak called Chinawa, (Jai khera in the map) has been formed in the eastern part and another Gajrar on the western boundary, the two aggregating 90 acres.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres	Configuration and aspect	Gradient.	Altitude	Rock and Soil.	Stock	Reproduction.	Treatment.
Karáli ...	2	155	Comprises all the basin of the Dai páni down to the fire line. The Dai pani a perennial stream traverses it from south to north and its numerous feeders are separated from each other by off-shoots of the Tika dhár and the great Konain dhár The sides of the nálas are steep and the top of the Gájrar ki dhár is rugged in places, but there are no precipices, and the minor dhárs are somewhat flat-topped. Some flat ground near the bungalow form a chak Predominating aspects northerly, north-westerly and north-easterly	In the higher portions 30°—45°, average 35°, along flat-topped dhars and generally in the lower parts about 30.°	...	Limestone with beds of shales along dhárs, friable shales being abundant in the lower portions. The sub-soil is clay and rather stiff, cropping out to the surface along dhárs and in the grassy blanks and from half to three feet deep; it is sandy in places in the upper portion. The top soil is a dark, rich loam up to two feet deep in the higher portions and along ravines, but very shallow in the lower parts and wanting along many dhárs. There is about a quarter foot of humus under stock.	A deodár forest, being really a continuation of that in the Konain block. The stock consists almost entirely of deodar, kail and bán, the latter being common only in the lower parts and along nálas. Blanks occupy 35 acres including the Dandachak of seven acres, a narrow strip along the Tika dhár and a larger one along the right flank of the Gajrár ki dhár, which are dotted with a few mature deodár and bán along the edge of the forest, but quite bare of trees in the middle There are some kokát such as wild pear, holly, Cornus capitata and macrophylla, &c, along the nálas. A very large proportion of the stock is composed of saplings, poles and young trees, the larger classes forming but a small percentage of the total number of trees The younger classes often form dense patches, and are also scattered amongst the mature trees growing quite vigorously The large deodár are very few, but there are a fair number of mature kail in the higher western parts, but the trees of both kinds are much branched and a few only are fit for timber There are a fair number of mature bán of poor quality in the lower parts along nálas and in blanks The youngest classes are mostly of excellent quality The forest is open in the lower parts and along some dhárs, as also where the older classes prevail, but the density is high where the younger classes predominate and there are many places completely stocked. There are ferns and grass in the open and along dhárs, whilst in ravines and in the higher parts under stock there is similar brushwood to that in compartment 1. Bingals are rare.	A splendid advance growth of deodár and kail in the middle and upper portions, there being seedlings of all sizes up to 15 feet growing vigorously more or less in dense patches In the lowest parts these seedlings are less numerous but are still common. Recent seedlings are also pretty common along dhars and at north-easterly aspects Young bán are mixed with the other seedlings in the middle zone and become abundant lower down, but they are damaged by grazing In the grassy blanks reproduction is almost entirely wantang	Free grant trees only to be taken out. Cleanings amongst the young kail to be made at the latest in 1899 and subsequently at intervals of five years if possible. A small chak, Dandachak, has been marked off close to the Konain rest-house.
	3	98	Contains all the slopes above the fire line west of compartment 2. The slopes are usually moderate and even the minor dhárs rounded whilst the nálas in their lower course have rather steep sides Prevailing aspects	30°—45°, average 35°, sometimes over 45° along the sides of nálas.	...	Shales of various colors predominate over most of the compartment, but limestone occurs along the southern and western boundary and along the dhárs. The sub-soil is a stony, sandy clay from ½ to 3 feet deep The top soil is a rich, dark loam fairly deep except along	A kail forest, that species predominating everywhere with the exception of a few acres near the fire line and along some nalas. The stock consists chiefly of saplings and poles of kail and deodár in the higher portions associated lower down with bán, ayár and burans, which also occur though but sparsely up to the highest points A few chír are to be found on dhárs near the fire line, and there is the usual kokát, principally confined to the nálas There is only	Splendid advance growth of kail is found everywhere except along the nálas where there are mostly bán seedlings. Advance growth of deodár is also good and exists in dense, but small patches along the Gajrar ki dhár. Recent seedlings are met with everywhere	Free grant trees only will be required from this compartment. Cleanings amongst young kail should be made at the same time as in the preceding compartment. A chak called Gaura has been marked off in ex-

		north-westerly and north-easterly.			dhárs and on grassy blanks. There is a thin layer of humus under stock.	a small percentage of mature trees and their quality is indifferent, whilst the younger classes are much more promising. The forest is open along dhárs and on westerly slopes; but fairly dense in ravines and in the upper part. There is a blank dotted with a few bán, ayár, and burans west of the nála just above the fire line, and a grassy strip without any tree-growth along the Singá dhár and a few similar but smaller blanks elsewhere. There is a small chak close to the western boundary. The undergrowth is the same as that in compartment 2.	except just above the fire line those of kail and deodár being common along dhárs and on westerly slopes.	change for fields in Legúna 2.
	4	162	Contains all the slopes below the fire line west of compartment 1. It is traversed by two perennial streams tributaries of the Seligad Some of the dhárs are sharp-edged and the sides of the nálas are steep and in places precipitous. It contains the Rander chak and a part of the Gajrár chak. Prevailing aspects north-westerly and north-easterly.	Usually 30°—45,° average 35,° but somewhat steeper in the lower portions.	...	Bluish, friable shales pierced in places in the lower portion with quartzose rocks. Limestone is found only along some dhars and on peaks. The sub-soil is a sandy clay, varying in depth from a few inches up to three feet, and is covered by a very free loam, shallow on slopes but deep along nálas. There is no humus.	A chír forest with a broadish belt of bán oak forest along the nálas, where there are also kokát with ayár, burans and a few chír. In the chír areas this species is mixed with an appreciable number of bán, ayar and burans, and there are a fair proportion of I and II class chír and bán, but their quality is rather poor, the former being injured by fires and the latter being much lopped for fodder. The forest is open and often very open in the chír area, but is often half stocked along the nálas. The ground is covered mainly with grass.	There are just a few established plants of bán, ayár and burans here and there, but those of chír are almost entirely wanting. In September last the ground was fairly covered with chír seedlings, which had just germinated, but they will doubtless be almost all killed by the next fire.	It will not probably be necessary to protect this compartment from fire during the next 20 years owing to its distance from Chakrata and the difficulty of exporting the timber to the plains Part of Gajrár chak extends into this compartment, and the Kander chak has been given in exchange for fields in Legúna 2.
Siári 46 B	1	90	Comprises all the slopes on the right bank of the Siári gad below the fire line within forest limits. The whole is rugged and the main dhár is full of irregular blocks of the hard underlying rocks which crop out frequently forming bare precipices along it. Aspects southerly and south-westerly.	30° to 45°, but usually about 45°, and in places over.	...	Quartzites crop out abundantly along the main dhar and some of its off-shoots and are associated with beds of various-colored shales, these predominating in the lower parts. The soil is a free, very shallow loam, and is absent on the steeper slopes and precipices. Bands of a clayey soil crop out here and there. Humus is entirely wanting.	With the exception of two small badly stocked patches containing bán, moru, ayár, burans, deodár and kail covering about 18 acres, the whole is an open blank dotted with the above species and with a few chír along the Siari gad, and a few rai and kokát along nálas, the deodar, kail and bán occurring in clumps of from 5 to 30. The conifers are very branchy and knotty and quite unfit for timber. The ground is chiefly covered with grass, ferns and a few barberry bushes.	Almost *nil*	... To be brought under fire protection.
	2	76	Similar slopes to those of Siári 1, extending from the fire line to the Konain-Mundáli road. General aspect south-westerly.	35° to 45°, average 40°.	...	As in compartment 1 except that some limestone is met with in the higher portions.	The greater part of the compartment (56 acres) is an open blank dotted with trees of deodár, moru, bán and one or two rai. The stocked portion consists of small patches below the lower abandoned Konain road of bán, ayár and burans with some deodar and kail near the fire line and of deodar, moru and rai higher up along nálas, and on slopes with westerly aspect. Between the new and the abandoned Konain-Mundáli roads in the eastern corner there are some firs mixed with karahu near Bangalá kúi and with deodar and moru lower down. Kokát, such as maple, Prunus Padus &c., is found along the Batu nála The number of mature trees is rather small and they are confined in the case of deodár and karshu to westerly slopes and in the case of rai and moru to the nálas. The stock is usually open and never very dense. Ringals abound under stock.	There are only a few seedlings in the grassy blanks, but in the upper portion near stock there is good advance growth of deodar, moru and karahu with a few established fir seedlings. Recent seedlings are coming up here and there.	Nothing required.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment
Siári ..	3	150	Comprises a portion of the right bank of the Siári gád below the Konain-Mundáli road as far west as the ridge bounding the Konain block. It is traversed by several tributaries, some perennial, of the Siári gád, and by off-shoots from the main ridge, a few only of which have sharp edges. General aspect northerly.	30°—40°, average 35° with in a few places gradients of 20° only.	...	Limestone cropping out abundantly along some of the dhárs, with thin beds of soft, friable, blnish shales. The sub-soil is a sandy clay deep in places, but wanting on dhárs. The top soil is a rich, dark and free loam about three-fourth of a foot deep and covered with pretty much humps.	A fir forest, rai predominating over the entire compartment except in the lowest point where moru prevails. The rai is associated with morinda in the higher parts east of Inanjoi ká thát. Deodar is absent from northerly slopes and the sides of nálas but is common enough on north-westerly aspects and in the lower portions, while moru is found scattered all over the compartment and is very abundant along the Siári gád. Kokás, such as horse-chestnut, bird-cherry, maples, wild pear, hazel, &c., is pretty common along the nálas. Small blanks, the sites of tháts are found in four or five places, and there is no tree-growth, as a rule, in the beds of nálas. The forest is rather open along dhárs and on slopes containing mostly mature trees, but is fairly dense on north-westerly slopes or where saplings and poles abound. The younger classes predominate greatly, but there is a good number of mature deodár, rai and moru The latter are mostly unsound and unfit for timber, but most of the rai and a few of the deodár are tall, and straight with long clean boles. The brushwood consists of desmodium, indigofera, honeysuckles, brambles, barberries, &c., with grass and fern in the more open places. There is a very rank growth of strobilanthes and other herbs during the rains. Ringals occur everywhere.	Recent seedlings are wanting except along the Siári gad where there are a few moru and deodár. Established fir seedlings are rare and when present are found in groups of 10 to 30. Those of deodar and moru are more common and are usually found on north-westerly slopes. There are a few kail seedlings near the Konain block. The quality of the seedlings is very fair.	Selection fellings of rai for supplying timber to Chakráta should take place after Siári 4 has been worked over for the same purpose. Girdling operations should be carried out in 1897, good rai being spared. The timber can be carried *vid* old timber carrying path to Kaluri thát on the Tons road. The Chaulu ká thát *vide* paragraph 91, has been sown and planted up with deodár, but the result is not satisfactory.
	4	115	Comprises all the slopes included in the Siári block above the Konain-Mundali road. The slopes are moderate and even in the middle, but some of the dhárs on either side are precipitous. General aspect northerly.	35°—45°, average 40° in the higher parts, but elsewhere about 35°.	..	As in compartment 3	There are 22 acres of karshu forest, forming a narrow belt, a few chains wide, along the main ridge, but having a breadth of nearly ten chains on westerly slopes; mixed with the oak and almost pure on northerly and north-easterly slopes is a fine growth of young morinda, with a few rai and moru at the lowest limits. Rai predominates in the lower portions, though here too morinda is common on northerly slopes and along nálas. Deodár occurs in appreciable numbers only at more or less westerly aspects in the eastern portion. The usual kokát is very abundant along nálas, and is also scattered all over the area, forming a large percentage of the total number of trees, though there are very few of	Similar to that in compartment 3, but deodar, moru and kail seedlings are almost altogether wanting, whilst recent and established karshu seedlings are met with along the main ridge.	Selection fellings of rai to supply Chakráta with timber should be commenced here, the scantling being carried by the path which leads to Kaluri that on the Tons road. Girdling where necessary should be done at the same time as that in Siári 3. A part of the area planted up with deodar in the Chaulu ka thát is in this compartment.

Gutugád	1	40	Contains all that portion of the Gutu gád block above the Tons road. Near Terona peak there are bare precipices forming sheer walls above the Tons road, but to the left of the Gutu gád the slopes are moderate and precipices rare. Aspects, in the southern half, north and north-west; in the northern half west and south-west.	25° to 45°, average 35° on left of the gád, 45° on the right.	..	Hard and brittle shales with a little lime stone in the southern half, and limestone mixed with grey shales in the northern portion. The sub-soil is a free, sandy clay profusely mixed with rock fragments and from ½ feet to 3 feet deep but wanting on precipices. The top-soil is a dark, rich loam about a foot deep and pretty thickly covered with humus on northerly and north-westerly slopes.	the I class. A few blanks similar to those in compartment 3 also occur here, and the density and quality of the stock are the same as in that compartment. The percentage of mature trees is very small, there being some large karshu on the top of the ridge, while I. class firs are confined to the nálas and to northerly slopes. There is the same brushwood, &c., as in compartment 3.		
	2	92	Occupies the slopes on the left bank of the Gutu gád from the Tons road to an old three-foot wide export path now almost obliterated. It is cut up by a number of small water-courses with steep sides and is strewn with large blocks of rock; an out-crop of bare quartzose rocks rising up many feet above the slopes below traverses the middle, sending off rather sharp-edged dhárs down to the gád. Prevailing aspect northerly.	Excluding precipices 30°—45°; the average being 30° in the higher part and 35° in the lower and along the Bherimára dhár.	..	Shales predominate along the Tons road, and quartzites with shales in the lower portions. The sub-soil is a free, loamy clay and the top-soil a dark, rich loam fairly deep where it exists and covered with a thick layer of humus.	The highest portions along the main ridge are stocked with karshu which caps all the three peaks, and it occurs mixed amongst other species down to the Tons road to the right of the Gutu gád. On westerly and south-westerly slopes, from a few chains north of the gád to the Ningáli dhár for some chains above the road, deodár predominates associated with karshu; south of this deodár belt, *i.e.*, on northerly and north-westerly slopes, the firs predominate everywhere except in the narrow belt of karshu. The usual kokát is found all over the compartment and is very abundant in nálas. A few kail and moru are also met with here and there. The forest is open on westerly and south-westerly slopes, but dense on northerly and north-westerly ones where young fir prevail. Most of the stock consists of saplings, poles and young trees, mature karshu being found only on the top of the main ridge, mature firs along the road and along nálas. The quality of the stock is fair only, but very poor on exposed slopes. There is grass on the warm slopes, indigofera, roses, brambles, strobilanthes, &c., elsewhere, whilst ringals occur everywhere.	Advance growth of karshu and morinda occurs in patches in the karshu forest and some established young rai are met with here and there, but seedlings are, as a rule, wanting on northerly slopes and along nálas, whilst recent seedlings of karshu and morinda are rare, and those of rai almost altogether absent. In the northern portion at westerly and south-westerly aspects, karshu and deodár advance growth is common, but there are no young firs; a few kail seedlings are scattered here and there on the warm slopes.	To be kept for free grantees' timber.
							A fir forest, morinda predominating in the higher and rai in the lower parts. Kokát is the next in point of abundance, but it is confined to nálas and other moist places, and is mainly composed of small khat-bboj, maples, willows, bird-cherry, viburnums, Pyrus Aria, &c.; karshu occurs on the top of the Bherimara dhár near Banguli láni and there are a few elsewhere just below the Tons road. Moru exists everywhere and is pretty common along the Gutu gád and some of the nálas. Some deodár are found along the Bherimara dhár and in the western part, but this species is absent from all the moist slopes. There are just a very few kail, yew and walnuts. The forest is pretty dense throughout, but there are two small blanks, one in the bed of the gád just below the road, and a second near Banguli láni. A very large proportion of the stock consists of the younger classes, the saplings and poles being of good quality and very vigorous. The small number of I class trees, chiefly deodár, firs and moru, are found scattered in ravines and on northerly slopes; they are tall and possess long clean boles, but a number of moru and some rai are unsound. The undergrowth is similar to that in compartment 1, but there is no grass.	Very poor. Recent seedlings except a few morinda are wanting, but a few established young rai, deodár and moru are found here and there, as well as some patches of morinda advance growth in the higher portions.	Most of the first class deodár have already been worked out of the compartment, but selection fellings for rai to supply Chakráta with timber can be made after Siári has been finished, and the remaining deodár can be given away to free grantees.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres	Configuration and aspect	Gradient.	Altitude	Rock and soil	Stock.	Reproduction.	Treatment.
Gutogad ...	3	178	The left bank of the Gutu gád from compartment 2 down to the cut fire line. It is cut up by a number of dry water-courses and the spurs from the Bheriasra dhár slope evenly down to the gad. There are very few precipices, but some of the water-courses have steep sides. General aspect north-easterly	30° to 40°, average 35°.	...	Quartzites interbedded with bluish shales. The sub-soil is a sandy, stony, clay from one to two feet deep and the top-soil is a dark, rich loam fairly deep in the higher portions and along nálas, but shallow on the dhárs and on easterly slopes. There is a thick layer of humus under all well-stocked forest.	An oak forest with some deodár, kail, firs, ayár, buráns and kokat. Moru occupies the higher and moister slopes, and bán predominates in the lower half. Rai, however, predominates on small areas near compartment 2, buráns and ayar on small areas in the west, whilst deodár and kail are scattered all over the compartment. The usual kokát is confined to the nálas with a few individual trees along dhárs. The forest is dense in the higher portions especially on northerly slopes, but it is rather open in the lower half. There are a large number of the younger classes, especially of kail, ayár, buráns and kokát, but there is also a fair proportion of mature trees of all kinds, those of rai being tall and straight, and those of the other species being of an average quality. There is a dense growth of indigofera, desmodium, honey-suckles, brambles, &c, everywhere, with grass and ferns along dhárs and in the west, and strobilanthes, &c., in the east.	Much better than in compartment 2 In the lower half especially along dhars and near the fire line there is good advance growth both scattered and in patches of kail, deodár, bán, ayar and burans, the seedlings being of all sizes up to 12 feet, whilst recent seedlings of the above species are also common. Reproduction in the upper parts is not so good, but established seedlings of deodár, moru and rai as well as some of kokát occur here and there in groups.	To to kept for free grantees. Girdling operations to be undertaken in 1898.
	4	46	Occupies the lowest part of the Gutu gad called here the Mohna gad below compartment 2 It is cut up by a number of dhárs and water-courses, the former being sharp-edged and the latter possessing steep sides. Chief aspects northerly and north-westerly.	35° to 45°. average 40°.	.	White quartzites much developed along the dhárs. The soil is a free, stony loam up to one foot in depth, but wanting along dhars.	Ayár and buráns predominate mixed with bán, and kokat in the lower course of nálas, more especially along the Mohná gád There is an appreciable sprinkling of chír, kail and moru, but only a few individual deodar and waldut The forest is an open one, especially along dhars and is only tolerably dense in nalas. Thereare a good number of mature bán and chír, some of which are tall and sound, but large trees of the other species are not common, and on the whole the quality of the stock is only fair The ground is covered by grass and ferns with a few indigofera bushes here and there.	As in the lower part of compartment 3. Some rare chír seedlings.	Unprotected from fire. but protection not required for the present, as its distance from Chakrata prohibits its being worked.
	5	100	Comprises the lower half of the right bank, of the Gutu gad as far up as the Ninga dhár, and consists principally of the basin of a large nala. The two principal dhárs are very sharp-edged	35° to 45°, but usually about 45° on the left bank of the nála, and over 45° on the right bank.	...	Shales of various colors with some limestone prevail in the upper part and hard white quartzites in the lower; bands of a sandy clay crop out along the flat portions of the dhár, but there	In the upper part, mostly to the left of the nála, there is a forest of firs associated with deodár along dhárs and on westerly slopes. The middle portion of the slopes on the left flanks of the Pauri dhar facing south or south-west is a rocky blank dotted with a few mature bán and one or two deodar and moru, whilst similar blanks with one or two large bán occupy small slopes along the gad: but otherwise the lower portions	Patches of advance growth of deodár mixed with some rai are found on the higher westerly and south-westerly slopes, but not on northerly ones, where, however there are some established groups of firs Recent	To be kept for free grantees Girdling operations to be undertaken in 1899.

			and very rugged, as are the slopes on the right bank of the nála, being full of huge, bare blocks of rock, and precipices are also common on the right flank of the Ningáli dhár. Prevailing aspect south-west on the left slopes of the nála.			is no soil on the precipitous ground. The top-soil where it exists is a dark, rich loam; fairly deep on northerly and north-westerly slopes, but very shallow on westerly ones, and usually absent from the southerly and south-westerly slopes. There is a thin layer of humus under forest at more or less northerly aspects.	are stocked with bán and moru, mixed with deodár, kail, and a few rai in nálas. Kokát, such as willows, maples, Pyrus Aria, khat-bhoj, hazel, &c., is very abundant along the Gutu gád and some nálas. The forest is open in the lower parts containing bán, but is dense higher up amongst the moru and firs. There is a good number of 1st class trees of all the chief kinds, the firs being tall and possessing long clean boles, but the deodár being very branchy and knotty. There are ferns and grass with bushes of indigofera, desmodium, &c., on the warmer slopes, and in the cooler ones of strobilanthes as well. There are some ringál in the higher parts.	deodár seedlings extend half way down the compartment on westerly and south-westerly slopes, where they are mixed with young moru, which occur in dense patches near parent trees in all the lower parts except on southerly and south-westerly slopes. Reproduction is backward on the lowest slopes of the Pauri dhár, there being only a few bán and kail seedlings.	
	6	56	Consists of the slopes on the right bank of the Gutu gád between the Tons road and the Ningáli dhár. It is very rugged, being full of bare, precipitous rocks often forming sheer walls. General aspect south-westerly	45° and over, but in a few places as low as 35°.	...	Bluish and grey shales with limestone along dhárs occupy the higher portions, but quartzites abound lower down. The soil is a sandy clay or a dry loam very poor and shallow and altogether wanting on precipices and along the sharp-edged dhárs. There is no humus except a thin layer in the eastern portion.	A little more than half the area is a rocky blank dotted with clumps (4 to 20 in number) of mature deodár. The remainder is stocked chiefly with deodár, karshu, moru and the firs; karshu and the firs are found just below the Tons road near the source of the Gutu gád, while moru is scattered all over the stocked area. There are some kokát along the gád. The forest is extremely open along dhárs and at south-westerly aspects, but somewhat less so on westerly and north-westerly slopes. There are a good many mature deodár, but they are mostly situated in the open blanks, are much branched and generally unfit for timber. Some 1st class trees of fir occur along nálas and on small slopes facing the north-west, some of karshu on dhárs and westerly slopes and of moru here and there all over the upper portion. On the whole the quality of the stock is indifferent. The soil is covered with a dense growth of grass, ferns, indigofera, desmodium, &c.	The blanks facing south have no seedlings, but there are a number of recent deodar and kail seedlings more or less uniformly distributed on open westerly slopes. On the stocked area advance growth of deodár occurs more or less in patches but there are few seedlings on southerly slopes. A few established seedlings of rai and karshu are appearing here and there above the high under-growth.	Most of the sound deodar were extracted at the time the Chakráta cantonments were being built, and considering the open mature of the stock, it is not advisable to fell more trees, except a few which may be marked for free grantees.
Bhujkoti ...	1	31	Occupies the portion of the block which lies above the Tons as far east as where that road first touches the ridge. The slopes are moderate and even and there are no precipices. General aspect northerly.	30° to 40°; average between 30° and 35°.	...	As in Gutu gád 1. There is a pretty thick coating of humus all over the compartment.	Karshu caps the Terona peak, extends all along the main ridge and on westerly and south-westerly slopes descends down to the Tons road. Along the main ridge it is associated with morinda and a few rai, but on secondary spurs and at westerly and south-westerly aspects there are a good many deodár. Most of the area is, however, a fir forest with an admixture here and there of karshu, deodar, and a few kail, moru and walnut. Kokát, such as bird-cherry, maples, viburnums, willows, Euonymus, &c., are scattered here and there and are abundant along nálas. There is a large blank in the north-eastern corner called Kaingu, that used for herding sheep during the rains. The forest is dense on northerly slopes, but frequently open on westerly and south-westerly ones The younger classes form a large proportion of the stock, those of morinda	There are some small patches of morinda advance growth on northerly slopes in the higher portions, and some established young rai lower down, whilst there are all sized seedlings of karshu and deodár along dhárs and at westerly aspects, but recent fir seedings are almost wholly wanting. Reproduction is on the whole insufficient, but the seedlings are of very fair quality.	Nothing to be done.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect.	Gradient	Altitude	Stock and soil.	Stock.	Reproduction	Treatment.
							being the most numerous. Mature deodár and karshu occur along dhárs and large firs along nálas. The quality of the younger classes is good, but that of the older four only. Ringáls abound.		
	2	138	Comprises that portion of the left bank of the Bhujkoti gád, west of a prominent spur running down to the gád from the main ridge a little to the north of the Terona peak. One large perennial stream and a number of smaller nálas traverse it in a north-westerly direction. Some of the slopes are steep and precipitous; rocks crop out occasionally, especially in the west. General aspect northerly, changing to north-westerly and north-easterly.	35° to 45°; average 40°	...	Limestone with various colored shales predominate in the higher parts along dhárs, but quartzose rocks mixed with bluish shales are much developed along nálas and in the lower parts. The sub-soil is a sandy clay fairly deep and cropping out to the surface along dhárs. The top soil is a dark, free, rich loam from a half to over a foot deep, strewn along nálas with fragments of rock. It has above it a pretty thick coat of humus.	There is a fir forest over the greater part of the area, (94 acres) and individual rai extend down to the lowest altitudes; the remaining area along the Bhujkoti gád is an oak forest consisting of moru and bán mixed with ayár, burúns and kail as well as with a few deodar. Deodár and moru occur in small numbers throughout the compartment, the former chiefly along dhárs and at north-westerly aspects, the latter in moist places. There are a very large number of kokát, which are particularly abundant along nálas, but they are mostly of small dimensions; amongst others are horse-chestnut, hazel, hornbeam, willows, maples, holly, Euonymus, Pyrus Aria, khat-bhoj and bhoj pattra. The forest is fairly dense throughout, except that it is rather open in the west. The younger classes predominate, but there are a considerable number of mature trees, which are tall and straight with good clean boles, though numbers are hollow. The large firs are common in ravines and large deodár along dhárs and on westerly slopes. There is a little grass along dhárs in the west, but the ground is usually covered with skimmia, daphne, desmodium, honey-suckles, brambles, strobilanthes and ferns.	Advance growth of morinda and rai in small patches is found in the upper portions and is associated on north-westerly slopes and along dhárs with a number of established young deodár. In the lower portions deodar seedlings up to 12 feet in height are common, and there are a good number of young moru. In the oak forest there are a good many established seedlings of kail mixed with deodár, bán and some moru.	Girdling firs and oaks, &c, in 1900, but good 1st class rai fit for timber should as a rule be spared.
	3	161	Contains that portion of the left bank of the Bhujkoti gad above compartment 2. It is traversed by a large nála called the Kainjawa-ka-nála and by some small watercourses and by a succession of minor spurs from the main ridge. The sides of the dhárs are steep and in places	As in compartment 2 ...	...	As in compartment 2, but the quartzose rocks are not much developed.	The whole area is a fir forest splendidly stocked with the two firs, deodár, kokát and the two oaks, karshu and moru. Karshu is found along the main ridge, moru along the Bhujkoti gád. Deodár is common on westerly and north-westerly slopes and almost predominates on small areas in the lower portions. The firs are found everywhere, morinda being the most numerous on northerly slopes in the higher parts, rai at similar aspects lower down. The density is usually high throughout; it is lowest at westerly aspects, but along nálas and on northerly slopes in the upper part the forest is completely stocked	Backward, there being only a few established fir seedlings scattered here and there, but there are some established young deodár on westerly and north-westerly slopes and moru seedlings near parent trees. Some groups of from 10 to 30 young karshu exist on westerly slopes along the main ridge. Recent seedlings are almost totally	Ditto in 1901.

			precipitous and the nálas are deep. A prominent spur from near Karémba páni divides it into two unequal portions. The portion to the north of this spur faces the west and north-west, the portion to the south of it faces more or less north.				There is a good proportion of mature trees, those of rai being the most numerous. They are tall and straight, and though some are hollow, a large number possess long clean boles and are quite fit for timber. The under-growth is similar to that in compartment 2.	absent, doubtless due mainly to the dense leaf canopy.	
Karámba ...	1	180	Occupies the highest portion of the block from a peak on the watershed parting between the Jamna and the Tons to between pillars 28 and 29 in the east, never descending for more than 20 or 25 chains below the main ridge, the lower boundary being an arbitrary line separating the karshu forest from the rest of the block. The sides of the nálas are steep, but there are really no precipices. General aspects north-easterly and easterly.	30° to 45°; average 35°	...	Limestone with a sub-soil of clay much developed along dhárs and varying in depth from one to three feet. The top soil is a dark, rich loam from one to two feet deep except along the main ridge, where it is wanting. There is a considerable amount of humus.	Almost entirely a karshu forest with some small slopes stocked with firs at more or less northerly aspects. On north-easterly and easterly slopes as well as along the main ridge the karshu is almost pure, but it gets mixed with the firs on north-westerly slopes and in the lower portions. In the west, where north-easterly, easterly, and south-easterly aspects prevail, the firs decrease in number and a good many deodár of all sizes are mixed with the karshu. The forest is on the whole more than half stocked, but the sites of the 'thats' are grassy blanks devoid of tree-growth. Saplings and poles form most of the stock, but there are a good number of mature 1st class trees, generally found in the case of karshu and deodár on the dhárs and flat portions and in the case of the firs near the nálas; they are mostly hollow and knotty. There is a quantity of strobilanthes, grass, ferns, and other herbs and an under-growth of brambles, barberries, willows, as well as plenty of ringáls.	Good all over the compartment, except in the open blanks, where it is wanting. It occurs more or less in patches of advance growth and there are healthy seedlings of all sizes, except that some of the karshu seedlings under dense forest are somewhat suppressed. In the western portion there are also a sufficient number of deodár seedlings from a few inches to 12 feet in height.	To be used to supply oak fuel for the Military Works, when the supply at Pandáwa is exhausted. Girdling of firs, if this operation be anywhere necessary, to be made in 1890.
	2	414	Comprises the slopes between the boundary of the Majhira block and the Kathián dhár, which separates it from compartment 3. It is traversed by a number of prominent dhárs and some dry nálas with steep sides, which in places become precipitous. General aspect easterly with modifications to the north-east, north and south-east.	35° to 45°, average 40°	...	As in compartment 1, but some shales are mixed with the limestone in the lowest parts, and there is no humus on easterly and south-easterly slopes, but a fair amount on northerly and north-easterly ones.	The easterly and south-easterly slopes are grassy blanks dotted with mature deodár and moru along nálas. On northerly and north-easterly slopes there is a forest of firs and moru mixed with deodar, the latter being knotty and much branched. There is a dense growth of desmodium, indigofera, brambles, barberries, &c.	Good for deodár, there being seedlings in every stage of growth. Advance growth of firs exists in patches and kail and moru established; seedlings are also pretty common.	Selection fellings of deodár are now being made, and all available trees should be felled before proceeding to the next compartment. Girdling of firs, oaks, &c., to be made in 1891 and 1906, but good first class rai should, as a rule, be spared.
	3	328	Lies to the south of compartment 2 and below compartment 1 as far as a prominent spur running down from the main ridge from near pillar and containing the great	Excluding precipices and sides of steep nálas, 20° along dhárs to 45° elsewhere; average 40°.	...	As in compartment 2, with a thick layer of humus, on northerly and north-westerly slopes, but none along dhárs and in blanks.	Portions of the right flank of the dhár separating the compartment from compartment 2 are grassy and rocky blanks at southerly and south-easterly aspects. In the western part deodár predominates at all aspects except northerly ones, and it is also found, although not in such numbers, at similar aspects in the east. In the rest of the compartment the firs predominate in the higher	Splendid reproduction of deodár in the western portion, there being seedlings of all sizes from a few inches up to 12 feet in height. Established seedlings of rai and moru are also common, and patches of advance	Selection fellings of deodár to take place after those in Karámba 2. Girdlings as above should be made in 1892 and 1907. A newly-made inspection path passes through

Description of Compartments—(continued).

Name of block.	Number of compartment	Area, in acres	Configuration and aspect.	Gradient.	Altitude	Rock and soil.	Stock.	Reproduction.	Treatment.
			part of the basin of a large tributary of the Bishair gád. It is traversed by numerous usually flat-topped dhárs and nálas with steep sides. There are no large nálas on the narrow left bank of the tributary, where the ground is precipitous. General aspect northerly with modifications to north-west, east, north-east, and south-east.				portions and moru along the Bishair gád and generally in the north-east. A large proportion of the deodár consists of mature trees, some of which are tall and straight with long clean boles, whilst others, on the contrary, along dhárs and in grassy blanks are much branched and rather stunted. The under-growth is similar to that in compartment 2.	growth of morinda are met with in the higher parts.	the middle of the compartment by which the scantling can be exported.
Karámba	4	378	Included between compartment 3 and a prominent spur running down from pillar to the Bishair gád. It consists of the basin of one large tributary of this gád and some other slopes which mostly drain directly into the gád. General aspect northerly, with modifications to the north-west, north-east, east, and south-east.	As in compartment 3....	..	As in compartment 3 ..	The slopes on the left bank of the large nála are grassy blanks dotted with moru and a few bán, deodár, and kail. Elsewhere firs predominate in the upper half, moru along the Bishair gád and in the lower parts generally. There are a few deodar on easterly and south-easterly slopes, also on north-easterly and north-westerly slopes in the lower parts and along dhárs. At the last two aspects they are tall and straight, but along dhárs they are stunted and much branched. The under-growth is similar to that of compartment 3.	There is a sufficient number of deodar seedlings from 1 to 10 feet high, occurring in patches along dhárs or where the stock is poor, whilst they are scattered over north-easterly and north-westerly slopes.	Selection fellings of deodár to take place after those in Karámba 3. Girdlings as above should be made in 1893 and 1904. It will be necessary to extend the path in the preceding compartment, about half a mile.
	5	336	Occupies the entire basin of a tributary of the Bishair gád, being included between two spurs running down to the gád from pillars and respectively. The various small nálas are deep and in places possess steep sides. Predominating aspects northerly and,	Varies from 30° along dhárs to 45° or even over along the sides of nálas.	...	As in compartment 4 ...	Similar to that in compartment 4, consisting of rai and morinda and a few moru in the upper and of moru and rai in the lower half, whilst deodár forms a small proportion of the stock throughout the entire area, except along nalas and at northerly aspects. As usual, however, it is pretty common, although in patches, along dhars and on north-easterly, easterly, and south-easterly slopes, but it avoids moist ravines. The mature deodár along dhárs are stunted and knotty, but there are some fine trees on north-easterly and also on north-westerly slopes wher-	Good advance growth of deodár is met with along the main ridge and its spurs, the seedlings being from 3 to 12 feet high; but it is rather scanty, occurring in patches. Some established seedlings are also to be found at north-easterly aspects, but, taken as a whole, reproduction is not good.	To be kept for free grantees according to the list in appendix I.

			north-easterly, but some slopes face the east and even south-east.				ever they are found at this aspect. Undergrowth as usual.		
	6	414	Occupies the whole of the basin of the next tributary of the Bishair gád and of a few slopes draining directly into the gád between two spurs running down to the stream from pillars and respectively The nálas have steep sides and the dhár which bounds it on the east is in places rugged and precipitous. The aspect is very variable, but westerly and north-westerly aspects predominate on the eastern part, north-easterly and easterly ones in the western portion	Excluding sides of nálas and the dhárs in the eastern part 35° to 45°; average 40°. In places as low as 26.°	.	As in compartment 4, but there is very little humus in the eastern portion.	The two fire predominate in the higher parts and are mixed with moru along nálas and with some deodár along dhárs, and at north-easterly aspects; in the eastern half there are fewer firs, and the stock consists chiefly of moru, bán, ayár, and burúns, together with a few deodar in most places except along nálas. On the whole there is not much deodar, and it consists of stunted and much-branched trees along the dhárs, though on north-westerly slopes there are some tall and clean-boled trees. There is the usual undergrowth.	As in compartment 5 ...	Ditto.
	7	105	...	...	...	Not described, but outside fire line and contains nothing of value		...	To be allowed to be burnt.
Páni-ká-nál ..	1	120	Have not been described, compartments 1 and 2 alone contain much deodár, compartments 3 and 4 consisting mostly of blanks and scattered bán and deodár, the latter being open to fires.						To be kept for free-grantees.
	2	248							
	3	372							
	4	151							
						KÁLSI FOREST			
Pánjgáon (part of)	1	53	Comprises the slopes below a cut line between the Bana gád and a dry nála to the south, as far as the Amláwa. There is a high precipitous bank along the Amláwa, then some ground sloping gently to the foot of the hill, whence the slopes are steep right up to the line Aspects south-westerly and westerly	In the upper hilly portion 30° to 45°, usually 30°; precipitous along the Amláwa.	...	The lowest rocks along the Amláwa are very compact shales, and resting on them higher up are highly metamorphosed, hard, crystalline rocks. The soil is a dark-colored loam, very loose and sandy and mixed profusely with pebbles of all sizes, and on the flat ground, where it is of a considerable depth, it is strewn with boulders of all sizes. On the hills it is from one to two feet deep only.	In the upper portions there are some mature bakli, gosáin, jingan, haldu, bel, kumbh, &c with an under-stage of kuri, karaunda, mendal ber, &c. In about the middle of the compartment there is a small patch of a little over an acre of sál, chiefly saplings and poles The chaor is densely covered with rausi, karaunda, mendal, amaltás, &c, overtopped by some large haldu and bargat trees. The forest is open in the higher parts, but dense on the chaor and in the patch of sal Most of the mature trees are unsound, caused probably to a certain extent by their being lopped for fodder The ground is immediately covered with grass along the ridges and elsewhere with dead leaves only or in places with an under-growth of Helicteres and Justicia. Amongst the climbers are: Combretum, decandrum, common along nálas and on moist slopes, and very injurious to tree-growth, Maljan occurring everywhere in small numbers, gauj, principally seedlings, and finally Pueraria tuberosa, siral, which is abundant, but not injurious.	very backward for bakli, haldu, and superior kokat, scarcely any seedlings, being found. Better for gosam, there being a fair number of seedlings, 3 feet and upwards in height. There are also a small number of seedlings of bel, kuri, sandan, mendál, and karaunda, and in the sál patch recent seedlings of that species are very numerous, but it is to be feared they will be trodden down by cattle.	Will be coppiced in 1908-1909 if the coppice scheme succeeds.

Description of Compartments—(continued).

Name of block	Number of compartment	Area in acres.	Configuration and aspect	Gradient.	Altitude	Rock and soil.	Stock	Reproduction.	Treatment.
						KÁLSI FOREST.			
Panjgfon (part of)	2	56	Comprises the slopes below the cut line from compartment 1 southwards to the next nála, as far as the base of the detached hill above the Amláwa. Steep except in the lower part, where the ground is almost level. Aspect south-westerly	In the upper part 30° to 45°, usually 30°; in lower parts 15° to 25°	...	As in the preceding compartment	Very like that of the preceding compartment and a similar patch of sál saplings and poles is also found.	As in the preceding compartment.	Will be coppiced in 1893-94
	3	29	Occupies the western half of the detached hill near the Amláwa, extending down to that stream. Along its bank the ground is precipitous, and the slopes of the hill are steep and occasionally precipitous. Aspect westerly	Omitting the precipitous ground 20° to 35°, average 30°	.	The underlying rock is a very soft, coarse and micaceous sandstone overlaid in places by a thick bed of boulders The soil is a very dry, free loam, extremely sandy and mixed with blocks of rock. It is shallow on the edge of slopes, but on gentle slopes from 1 feet to 3 feet deep.	Chiefly Lokát, large bakli, haldu, and gosám being met with here and there Along the top of the hill there is a stock of sál saplings and poles with a few young sain There is some khair along the Amláwa. The crop is rather open, becoming denser in the sál area. The quality of the trees is not very good, as owing to the accessibility of the compartment they are much lopped for fodder, but young sál are in a better condition Combretum decandrum is very abundant in nálas and does much damage Very little grass, but the undergrowth of Helicteres, Woodfordia, Carissa, &c.	Very backward. There are a few seedlings of sál and inferior kokát but none of other species, except a good many khair seedlings along the Amláwa.	To be coppiced in 1900-1901.
	4	32	Occupies the rest of the detached hill Aspects north-east and south-east.	25° to 40°, average 30°.	...	As in compartment 3	As in compartment 3. The flat top of the hill is stocked principally with sál saplings and poles. The density throughout is greater than in the preceding compartment	As in compartment 3 ...	To be coppiced in 1901-1902.
	5	56	Included between compartment 4, a nála near pillar 27, and an undefined line between it and compartment 6 The middle portion is flat, with hilly ground above and a high bank below facing south.	In the hilly parts 30° to 35°	..	Along the high bank there is a débris of large boulders, fragments of sandstone and shales covered by a very thin layer of dry, sandy loam. Near the Jumna, beds of a very soft micaceous sandstone of considerable depth crop out extending to the upper boundary Elsewhere there	As in compartment 2, most of the kokat being found on the chaor and haldu, bákli, gosam, &c., being scattered over the slopes. There are two or three acres, including a field obtained in exchange for other land, suitable for planting	As in compartment 2 ...	To be coppiced in 1904-1905.

						are boulder beds covered with a loose sandy soil of great depth.			
	6	80	Above compartment 5, from the nála passing near pillar 27 westwards to compartment 2. The whole is hilly ground facing south.	30° to 40°, average 35°.	...	Beds of shales and sandstone profusely mixed with huge blocks, some '*in situ*,' of a hard crystalline rock In places red marl is exposed by landslips. The soil is a dry sandy loam from ½ to 2 feet deep mixed with fragments of rock.	As in the hilly parts of compartments 1 and 2. The forest is very open along ridges, becoming denser near nálas and in other moist places. Combretum decandrum is not so common as in adjoining compartments, but maljan and Pueraria are pretty general.	As in hilly parts of compartments 1 and 2	To be coppiced in 1891-93.
Barabágh ...	1	100	The right of the Bána gád. Except along the gád and in the south where the ground is broken up by small landslips, the slopes are even and moderate General aspect south-westerly	25° to 35°, average 30°, and precipitous in places.		A compact shale, in places ferruginous mixed with large blocks of a crystalline volcanic rock. The soil is a black, loose, sandy loam mixed with fragments of rock and from ½ to 2 feet deep	The central portion, occupying the flattened top of the gently sloping spurs, contains a sapling and pole forest of sal. with some sain, harra, haldu, bakli, gosam, sandan, &c Bákli (mostly mature trees) becomes more abundant in the upper part below pillars 22 and 23, whilst gosam, haldu, and kaim predominate just below the sál area. The inferior kokát, kuri, rauni, and mendál are found everywhere. Tushari, gainti, bel, &c predominate along the Bána gád. Above the sál area the forest is very open and the trees are of a wretched quality. In the sál area and elsewhere the forest is about half stocked; young sál, though numerous, are not well grown, whilst the few large trees are unsound.	In the upper portion there is some advance growth of sál, sain, and kokát, but the seedlings are not numerous and are usually unhealthy and stunted The sál area is literally covered with recent seedlings of sal with a few large ones from 3 to 5 feet high, but seedlings of other species are generally wanting.	To be coppiced in 1897-99. The area containing sál has been closed this year, but if the coppice scheme progresses favorably, it should be reopened as soon as 270 acres are closed elsewhere and only reclosed when the time arrives for coppicing it.
	2	91	Steep ground above precipices which overhang the Amláwa from compartment 1 northwards to a nála passing by pillar 24. Cut up by a number of nálas and in places the ground is broken and precipitous. Prevailing aspects west and north-west.	30°-45°, average 40° .	...	As in compartment 1	...	Combretum decandrum is abundant and injurious in the lowest part The growth, &c., consists of mature sain, bakli, gosam and large kokát, with an understage of Helicteres, mendál, karaunda, &c. Kuri is found almost all over the compartment, especially in the higher and stonier parts Near compartment 1 there are large bákli and sain and a few sál with some inferior low kokát. Very open in the upper part and only dense near nálas. Large trees are usually unsound. Combretum decandrum is very abundant along nálas and maljan is pretty common. There is a dense covering of grass on southern slopes and the under-growth is the same as in compartment 1.	Reproduction is backward in the lower part, bákli seedlings being nearly always absent, and there is sparse advance growth of sal, sain, and sándan near compartment 1, whilst there are a few seedlings of all sizes up to 5 feet of sál, sain, and padal, &c., from pillar 23 down to the nála.	To be coppiced in 1905-1906.
	3	104	Occupies the rest of the block north of compartment 2. The ground along the Amláwa and along the dhár from pillar 23 to 26 is very precipitous and full of small landslips and higher up the slopes are very great, but near pillar 26 there is a patch of level ground. Main aspects south and south-west.	Usually 45° and over but close to pillar 26 15° to 20° only.	...	The rock consists of beds of metamorphosed and in places ferruginous shales mixed with a brittle, crystalline rock. The soil is a loamy sand, dry, loose and very shallow. In one or two places along the Amláwa beds of a crystalline limestone are also met with.	The precipitous portions are poorly stocked with a few mature bákli, jingan, &c. Higher up there are better trees and in larger number of bákli, gosam, jingan, dhebri, &c. The highest part is clothed with kuri (Nyctanthes), whilst sándan is found everywhere. There are a few large mango near pillar 25. Near the Amláwa the forest is extremely open: in fact it is a blank dotted only with trees; higher up it becomes somewhat denser, but is always very open. The quality of the stock is very poor. Combretum decandrum is common along the lower courses of nálas and maljan occurs everywhere. The	Very backward. A few seedlings only of kokát, such as albizzia, sándan, &c., are met with here and there.	The cutting of green fuel for lime-burning must be discontinued, as the hill-side is getting denuded. This compartment can never be treated on the coppice system owing to the friable nature of the soil and the frequency of landslips.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	No. of compartment.	Area in acres.	Configuration and aspect.	Gradient	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment.
							ground is either covered with grass or is bare owing to numerous landslips.		
Barabágh ...	4	140	Very precipitous ground, rising from the Amláwa, below compartments 1 and 2. Full of landslips.	...			Neither valued nor described ...	..	No green timber to be felled.
Haripúr ...	1	43	Occupies the western portion of the southern slope of the main spur abutting on the Tons, as far east as a nála which bounds the Baiwála chak. The top of the spur is more or less flat.	20° to 30° except on the sides of nálas, sometimes 35° to 40°.		The rock is a very soft, micaceous sandstone. Angular pieces of it are profusely mixed with the soil, which is sandy, very shallow, and dry, but contains some vegetable mould. A band of clay crops out at the top of the hill The upper part is blocked up with large blocks of sandstone and there is little soil.	A mixed forest of sál, sain, bakli, haldu, gosam, khair, and kokát. The flattened top of the ridge is occupied with sál mixed with a few sain, mahua, bahera, grewia, bákli, &c., the last four species extending down to the foot of the hill, where they get mixed with mature gosam, haldu, and kaim. Kuri is found on the upper rocky portion, karaunda, mendál, and ber everywhere The forest is nowhere very open nor very dense, but is best stocked on the high flat part in the east The trees do not attain large dimensions and are badly grown. The number of first class trees is very small, consisting mostly of unsound haldu, gosam, and kokát Second class trees are numerous, but half are unsound. Grass only found at the foot and along the top of the hill.	Very good for sál with advance growth from 3 to 5 feet high and innumerable yearlings, which are being injured by grazing. Young sain are also found on the flat top, but the reproduction of bákli, haldu, and gosam is indifferent.	To be coppiced in 1903 —1904.
	2	26	The southern slope of the same spur from compartment 1 to a small nála passing by pillar No 14 Similar in configuration and aspect to compartment 1.	As in compartment 1 ...	...	As in compartment 1 ...	As in compartment 1. A number of khair saplings and poles found on the top of the ridge, and close to the nála at the western extremity there are a few trees of Diospyros embryopteris. Rather denser than compartment 1, but very poor and open along the edges of the secondary spurs. Very similar also to that compartment as regards quality, but the sál poles are straighter and more healthy.	As in compartment 1, but seedlings somewhat more numerous.	To be coppiced in 1902 —1903.
	3	45	A continuation of the same slopes as far as the next nála, being bounded below by the outer forest boundary and the Beyaski chak; aspect south-east, some level ground at the foot of the hill.	Flat at top and bottom; 25° to 30° in upper part; 35° to 40° in lower portion.	...	Ditto ...	As in the preceding compartment, but inferior kokat is more abundant. There are also a few Diospyros along the nála. The level ground between pillars 14 and 15 and the foot of the hill is a grassy bhabk with clumps of scrub growth Elsewhere the density is as in compartment 2, as is also the quality Combretum decandrum is found along the lower course of the nálas.	Recent seedlings of sál and sain are as numerous as in the two first compartments, but those of other species very rare.	To be coppied in 1898 —1900.

4	53	A continuation of the same slopes to the next nála and similar in configuration and aspect to compartment 3.	As in compartment 3,	...	As in compartment 1 One or two beds of brown már also crop out at the top of the ridge.	As in compartment 3 A few individual haldu and mango occur here and there on the level ground at the foot of the hill. Combretum decandrum is very abundant and injurious to the crop in the lower parts.	As in compartment 3 ...	To be coppiced in 1894-95.
5	66	A continuation of the same slopes as far as a foot-path to Kalsi, starting from near chak pillar 4, and a nála passing above pillar 12. Aspects south, north-east, and others.	A slope facing south or south-east, 30° to 35°; slopes facing north and north-east, 15° to 25°.	...	As in compartment 4	The higher portions have a splendid crop of sál saplings and poles associated as usual with sain, bákli, jaman, debri, &c., going half way down the north-easterly slopes, but only a few chains down southerly ones, which are then stocked with mature bákli, gosám, and a few mahua, haldu, &c., whilst close to the foot of the hill some large haldu, mango, and jáman overtop the usual brushwood of inferior kokát. The lower half of the north-easterly slopes is stocked with inferior kokát mixed with a few of the larger kinds. The forest is fairly dense, especially in the sál area, and the quality is pretty good. Combretum decandrum is very abundant in the lower, maljan and goj rare in the upper parts.	There are sál seedlings of every age, but by far the largest number are yearlings. There is also a sprinkling of seedlings of other species, but they are not very promising and are browsed down by cattle.	To be coppiced in 1891-93.
6	37	Occupies the right slopes of the offset from the main spur that meets the Amlíwa below pillar 1. The top is somewhat flat, and there is some flat land below the cart-road to the outer boundary. Aspect southerly	20°—30° in the hilly parts, going up to 35° just above the cart-road.	...	The whole is strewn with large blocks of the underlying soft micaceous sandstone which forms the backbone of the ridge. The soil is a dry, shallow sand. Along the top of the ridge beds of reddish marl crop out disintegrating on exposure into small pieces and there are also one or two bands of clay.	There is a continuation of the band of sál along the top of the spur, chiefly saplings mixed as usual with some saplings of sain and still fewer trees of bákli, gosam, and superior kokát. The rest is similar to the crop on the southern slopes of compartment 5, but the forest is denser owing partly to the gentler gradients and partly to a greater proportion of mature haldu, gosam, and superior kokát. Combretum decandrum is found all over the compartment, and there are also a few goj and maljan climbers. There is an almost complete absence of grass, Justicia occurs along the foot of the hills and Murraya, karaunda, &c., elsewhere.	Recent seedlings are numerous on the flat top of the spur and established seedlings of the same species up to 6 feet in height are also seen here and there; there are also seedlings of other species of all ages, but they are not sufficiently numerous.	To be coppiced in 1890-91.
7	53	Occupies the north-easterly slopes of the above spur between the cart-road and the foot-path to Kálsi. Some flat ground in the north forms part of the Kálsi camping-ground.	30° to 45°, average 35°,	...	As in compartment 6, but the soil is deeper and less stony.	As in compartment 6. The abundance of Combretum decandrum makes the forest look a very dense one. There are mango trees on the camping-ground.	As good as could be wished for sál, whilst established seedlings of gosam, domsál, and inferior kokat are more numerous and more thriving than in the preceding compartment.	To be coppiced in 1889-90.
8	77	Situated above Kálsi from compartments 5 and 7 to the main spur There is some level ground near the cart-road General aspect south-easterly.	Usually about 25° ..	...	The soil is a coarse sand, very loose and dry and mixed with fragments of a hard, metamorphosed rock which crops out at the crest. The soil is deep near the foot of the hill, becoming very shallow near the top, where it is often only present in the interstices between the large blocks of rock.	There are a few saplings and poles of sál along the crest of the hill, but by far the greater portion of the stock consists of bákli, gosam, haldu and the superior kokát, with inferior kokat forming the lowest stage of the leaf canopy Mature trees are not numerous and are generally confined to the upper parts. The forest is fairly dense, but the stock is of an inferior quality, most of the large trees being crooked and unsound. The bákli have been much lopped Combretum decandrum is very abundant, except near the top of the ridge. The soil is covered with dead leaves only in the upper parts and lower down with Justicia Helicteres, &c	With the exception of sál recent seedlings are totally absent; but established seedlings of other species are found everywhere, though not in sufficient numbers those of haldu and bákli being the rarest.	Excluded from the area to be coppiced on account of its proximity to Kalsi. Only dry wood should be taken out.

APPENDIX C.

Description of Compartments—(continued).

Name of block	Number of compartment	Area in acres.	Configuration and aspect.	Gradient	Altitude.	Rock and soil	Stock.	Reproduction	Treatment.
Haripúr ...	9	46	Consists of the slopes facing the north west, from the main ridge to the cart road, and the outer boundary	20° to 35°, average 25°	..	The underlying rock is a hard, compact, crystalline stone, cropping out along the edges of spurs Huge blocks of it cover the higher parts and smaller pieces are profusely mixed with the soil which is a coarse, loamy sand deep in places but shallow along ridges.	In the lower portions there is the usual scrub of ráuni, kura, mendal karaunda, chila, &c., with individual jingan, the whole being enveloped by a dense mass of Combretum decandrum. Higher up bákli, huldu, gosam, &c., appear, increasing in number up to the ridge where there are a small number of sál saplings and poles. The forest is more than half stocked, but the quality of the trees is as usual indifferent. There is very little grass and the usual brushwood in places.	As in compartment 8.	Excluded from the area to be coppiced on account of its proximity to Kálsi, but a small quantity of green fuel not exceeding 3,000 stacked cubic feet may be cut annually from compartments 9, 10, 11 and 12, although if possible the lime-burners should be induced to take their fuel from the areas coppiced.
	10	75	The compartment lies in the large bend of the cart-road and extends as far as the Amláwa block and the outer boundary. Some nearly level ground in the west, then gentle slopes and finally steep ones towards the east Aspects southerly and south-westerly.	Variable, usually 10°—25° in west, 35°—45° in the east.	..	The underlying rock consists of beds of friable shales interstratified along the upper and eastern portion with beds of a crystalline bluish limestone. The soil is a dry, loose sand mixed with small pieces of marl in the upper and eastern portions and with vegetable mould on the flattish ground in the west	In the western half there is a dense growth of inferior kokát sprinkled with some mature huldu, gosam, bákli, &c. In the eastern half the scrub becomes sparse and a few bákli and jingan form the upper stage of the leaf canopy, the stock deteriorating towards the eastern boundary where there are often open blanks dotted only with trees. The mature bákli, baheri and dhobri have been much lopped and are generally unsound. Combretum decandrum forms heavy cover throughout. The soil is covered with dead leaves, grass and an undergrowth of Justicia and Helicteres.	Only a few established seedlings of all kinds are to be found.	Ditto
	11	77	Comprises the slopes above the cart-road as far west as a nala which runs past Khadar khera.	Usually 40° and precipitous along the road.	... .	Shales of various colors mixed with limestone and a hard, compact, granular rock The limestone is bluish and crops out near pillar No. 30. The soil is very coarse, containing a small percentage of loam and mixed with fragments of all sizes of the underlying rocks It is very dry, loose and shallow	A mixed crop of sain, bákli, huldu, gosam, sándan and kokát. The kokát are most abundant along water-courses, those associated with bákli and gosam along ridges being chiefly jingan and kuri. The forest is dense near the nala, but becomes very open along dhárs and the ground is frequently only dotted with trees in precipitous places. Combretum decandrum forms very heavy cover along the nála and in the west generally Elsewhere maljan is pretty general and is injuring a number of large trees. Pueraria tuberosa and Dioscorea sp are abundant	As in compartment 10	Ditto

12	99	Comprises most of the right bank of the nála passing by Khadar khera as far west as the ridge between pillars Nos. 7 and 34. General aspect south-easterly.	30°—35° in upper parts; 35°—45° in lower portions.	...	The crests of the ridge are covered with blocks of hard, crystalline, metamorphic rocks, and in the low-lying parts there is a soft crumbling shale many feet thick. The soil is a dry, coarse, sand mixed with a small quantity of loam fairly deep in the lower but shallow in the higher parts.	A few sál saplings and poles are found in the middle of the westerly ridge. Bákli, gosam, huldu and kokát such as babera, kat-bhilawa, &c., are found everywhere, whilst the scrub-growth of rauni, chila, karaunda, ber, &c., is most abundant in the lower portions especially along nálas and is mixed higher up with kuri. Large kokát, such as dhebri, bel, amaltas and jingan are plentiful near nálas. The forest is open in the upper and fairly dense in the lower half especially along nálas, but its quality is very indifferent. Combretum decandrum is very injurious along the nala.	Very backward. Only some recent seedlings of sál are found on the ridge and just a very few established seedlings of other species here and there.	Ditto
13	54	Occupies the slopes running down from the Haripur ridge as far as the Khadar khera nála and an undefined line from this ridge to pillar No. 6. General aspect westerly.	15°—30°, but 35° just below the high peak.	...	Soft, micaceous sandstone with angular pieces of the same rock covering the whole compartment. On the flat top of the ridge bands of a stiff red clay come to the surface. On and near the peak huge blocks of hard rock are very frequent. There are beds of marl in certain places and the soil is usually shallow and sandy.	Well stocked with a pretty dense forest of mature, bákli, gosam and a few others with a lower stage of inferior kokát, such as kuri, karaunda, mendal, rauni, &c. Along the nala there is a dense growth of inferior kokát with some tall huldu and there are some individual sál along the spur. The forest is everywhere dense except near the ridge. The quality of the stock is fair. The soil is immediately covered with dead leaves only. Combretum decandrum is very luxuriant along nálas and in the lower parts generally.	As in compartment 12 ...	To be coppiced in 1908-09.
14	49	The slopes from compartment 13 southwards to an undefined line from pillar No. 3, to the ridge. General aspect westerly.	Usually 20°, but sometimes 35° along sides of nálas.	...	As in compartment 13. Ditto.	This and the preceding compartment are the best stocked areas in the block. Here the stock is mainly sál associated with some huldu, bakli dhebri, jaman, gosam, kat-bhilawa, harra, jingan &c. Mature trees are very rare and are usually unsound and the crop is chiefly composed of saplings and poles. The forest is very well stocked, the density being very great, and the quality of the young trees is very fair.	The ground is literally covered with yearlings of sál which only require immediate protection for a short time from cattle to establish themselves. The present number of established seedlings are few.	To be coppiced in 1899-1902, one-third of the area each year.
15	49	The slopes south of compartment 14 to a nála running close to new pillar No. 1. General aspect westerly.	Usually 25°, but 35° near Tons and some nálas.	...	...	The upper half contains a very good pole forest of sál with a sprinkling of bakli, huldu, sain, babera, harra and other kokát. The lower half has a mixed forest of bákli, huldu, gosam, and kokát. Bákli chiefly occupies the upper slopes, whilst gosam, jáman, dhebri, &c., line the nálas; large huldu are met with throughout and there is the usual inferior kokát of rauni, &c., most abundant near the Tons. The forest is often very dense and is only open on a few westerly slopes. Large trees are hollow, but there are some very fair saplings and poles. Combretum decandrum is found along nálas and in the lower parts, and some malján in the higher portions.	Good for sál, there being numerous recent seedlings and a sparse advance growth 3' to 6' high, but poor for the other species.	To be coppiced in 1906-07.

APPENDIX C.

Description of Compartments—(continued).

Name of block.	Number of compartment.	Area in acres.	Configuration and aspect	Gradient.	Altitude.	Rock and soil.	Stock.	Reproduction.	Treatment
Haripúr	16	109	Occupies the rest of the slopes from the Haripúr spur between compartments 15 and 1 The banks overhanging the Tons are often very precipitous, but the slopes become more moderate as the ridge is approached, the top of which is level Aspects westerly and north-westerly	In the lower third 40° and 30° above.	...	As in compartment 13	Where the spur slopes down to the Tons there is a very open forest with a few large sál, sain, bákli and khair together with an understage of the usual inferior kokát. The proportion of sál saplings and poles with the accompanying species kat-bhilawa, babera, debri, &c, becomes larger towards the east, extending for about five chains down the slope Where sál ends, there is a stock of mature, bákli, gosam, huldu, and jáman mixed with a very large number of kokát, pula, Wendlandia, gainti, kachnár, &c., right down to the Tons. The forest is of an open nature, becoming dense only in the sál area. About half the first and second class trees are hollow, stunted and crooked and the sál poles are looking unhealthy Climbers exist as in compartment 15 There is grass in the open parts and the usual undergrowth throughout.	As in compartment 15. There are some seedlings of Wendlandia and sándan from 3' to 6' high.	To be coppiced in 1895-97, half the area in each year.
	17	98	Occupies the piece of level ground at the foot of the hill between the Tons and a small nala passing to the west of pillar No. 7 There is a high bank along the Tons and a small hillock just above it.	Level except the bank along the Tons with a slope of 30°.	...	The soil is fine sand mixed with silt and from one to three feet overlying thick deposits of boulders and sand A clayey soil crops out in some places.	Over the level ground there is a scrub of inferior kokát with some large huldu, pipal, jingan, dhebri, &c, at great intervals. Near the eastern nála the scrub is in patches separated by grassy blanks The small hillock contains a good number of sál saplings and poles and a few large trees together with some bákli, huldu, gosam, sain and the usual inferior kokát. This type of forest extends all along the high bank of the Tons where there are also a few trees of khair and of Dalbergia latifolia. The forest is usually open, becoming denser on the hillock and generally in the western half Most of the mature trees are unsound and the quality of the rest is very indifferent Combretum decandrum is plentiful along the high bank and on nálas.	Almost totally absent there being only a very few inferior kokat seedlings here and there on the level ground On the hillock and along the high bank there are recent seedlings of sál and some rare established seedlings of the same species from 2' to 4' high, as also a few seedlings of other species.	Only dry wood to be removed
	18	102	Occupies the rest of the level ground between compartment 10, the Baiwala chak and the Tilwari paras. There is a high bank along the southern end	High bank 25°.	...	As in compartment 17	A scrub of raunj, kura, mendal, karaunda, ber, chila, &c., occurring in patches of 10 to 100 shrubs interspersed with grassy blanks The whole compartment seems to have been at one time under cultivation. Large huldu, pipal, jingan, kaim and mango are scattered over the entire area with as a rule dense scrub underneath them Along the high bank and nálas the stock is continuous and uniform, although never dense Combretum decandrum is abundant along the high bank and occasionally Spatholobus Roxburghii and Ventilago calyculata are also met with.	Almost entirely absent.	Ditto.

Lurli	1	...	Comprise the slopes below the cart-road from the boundary of the Matkángra block to a prominent dhár running down to the Amlawa from the great bend in the cart-road, and the compartment is bounded on the west by the cantonment boundary line. There are next to no precipices, although the sides of nálas are rather steep. General aspect westerly with modifications to the north and north-west, south and south-west.	From 30° up to 45° in some of the higher parts along nálas; average 35°.	..	Grey and bluish shales pierced along dhárs by an outcrop of a hard, metamorphic rock. The subsoil is clay, rather stiff along dhárs and in open places, but free in the lower slopes and mixed with fragments of rocks. The top soil is a free dark loam, very shallow or even wanting along dhárs and in open blanks but up to a foot deep in stocked portions. There is a thin coating of humus on northerly and north-westerly slopes.	The left flanks of prominent dhárs facing the west, south-west and south are grassy blanks either dotted with individual bán, ayár and burána or without any tree growth on them. The rest of the compartment is stocked, with a mixed growth of bán, moru, ayár, burána and kokát. The scrub of ayár and burana predominates over nearly the whole area, but owing to the small size of the trees this does not appear to be the case at a distance when it seems to form the bulk of the stock; bán is especially abundant at northerly and north-westerly aspects. Kokát is common along nálas, the species being Cornus capitata and macrophylla, Euonymus pendulus, poplar, willow, holly, &c. The forest is excessively open along dhárs, but is rather more than half stocked on northerly slopes and along nálas. The saplings, poles and young trees bear a fair proportion to each other, but the number of I class trees is rather small, although there are a good many mature bán some of which are tall but knotty. There is the usual grass at warm aspects together with brambles, barberry, indigofera, desmodium, &c. on northerly and north-westerly slopes.	Good, there being seedlings of all sizes from recent ones to young plants up to 10 feet in height. These seedlings are numerous where the leaf canopy is open and along dhárs, but are rather sparse on south-westerly and southerly slopes and they are still fewer in the blanks.	If the other Cantonment blocks are leased, fellings of unsound trees should first be made here according to para 166 and planting work should be carried on, Rs 200 being spent annually until all blanks are re-stocked.
	2	...	Occupies the basin of a small nala to the south of compartment 1. There is no precipitous ground. General aspect westerly modified to south west on the right bank of the nála and to north-west on its left bank.	As in compartment 1	...	As in compartment 1.	Grassy blanks occupy many acres including nearly the whole of the right bank of the nala, and stripe along the southern dhár as well as a few very small patches elsewhere; they are dotted with a few bán, ayár and burána along nálas, but otherwise are devoid of tree-growth. The remainder is stocked with a scrub of ayár and burána which predominate everywhere, but is mixed with an almost equal quantity of bán, whilst there are a few kokat along nalas. The forest is on the whole about half stocked, being very open along dhárs, but often fairly dense on northerly and north-westerly slopes. Along the dhára the trees are rather stunted as they are also in the western portion, but on northerly slopes there are many tall and vigorous oaks. There is grass and undershrub as in the preceding compartment.	Very good advance growth of bán, ayar and burána in the west as well as along dhárs in the well-stocked areas. There are seedlings of all sizes, occurring here and there in dense patches. The grassy blanks, however, possess very few established seedlings. The seedlings are vigorous, but in the western portion they have bushy crowns which is doubtless due to grazing in the past.	Work to be continued here after that in Lurli 1 has been completed.

NUMBER OF ACRES STOCKED WITH DIFFERENT SPECIES OF TREES IN EACH

Name of block.	Number of compartment.	Area.	*Deodár predominating.*					*Kail predominating.*				*Fir predominating.*				
			Deodár.	Deodár and kail.	Deodár kail and other species.	Deodár, oaks and firs.	Total.	Kail.	Kail, deodár and other species.	Kail, oaks and firs.	Total.	Fir.	Fir and deodár.	Fir, deodár, kail and other species.	Fir, pines and oaks.	Total.
Kua	*	66	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Singori	* 1	97	...	...	...	...	...	...	...	...	...	..	...	...	...	...
	* 2	104	...	...	...	...	...	...	...	...	...	...	...	...	...	..
Total ...	...	201	...	...	...	...	...	...	...	...	...	.	...	..	...	...
Raura	*	106	...	...	..	...	...	...	...	...	...	...	...	...	...	...
Kota	...	174	...	...	...	..	...	...	...	...	...	...	...	...	...	...
Kurwa	* † 1	65	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	* † 2	65	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	...	130	..	...	...	..	...	...	...	...	...	...	...	...	...	...
Bándla	...	98	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Inári	1	132	...	...	...	...	...	...	...	...	...	...	...	...	...	. .
	2	106	...	...	...	...	...	...	...	...	...	2	...	...	...	2
	3	114	...	...	...	...	...	...	...	...	...	...	...	...	...	
	4	80	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	5	70	...	...	...	...	...	...	...	...	...	..	...	...	.	...
Total ...	...	502	...	...	...	...	...	...	...	...	...	2	...	..	...	2
Bodlár	* † 1	254	...	...	...	126	126	...	...	...	...	12	...	...	...	12
	* † 2	162	...	...	...	92	92	...	...	...	...	...	...	...	...	...
	* † 3	201	8	...	...	21	29	...	...	...	...	...	...	...	...	...
	* † 4	210	5	...	...	70	75	...	...	...	...	...	...	...	...	...
	* † 5	231	.	...	...	128	128	...	...	...	...	...	...	...	...	.
	* † 6	110	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	* † 7	205	2	...	...	35	37	...	...	...	...	...	34	5	...	39
Total ...	...	1,463	15	...	...	472	487	...	...	...	...	12	34	5	..	51
Moila	* 1	105	...	...	...	...	...	...	...	...	..	..	...	.	83	83
	* 2	125	...	...	...	...	...	...	...	...	...	4	40	...	...	44
	* 3	175	...	...	...	...	...	...	...	...	...	..	26	...	...	26
	* 4	105	...	...	...	...	...	...	...	...	...	68	.	..	.	68
	* 5	105	...	...	...	...	...	...	...	...	...	...	110	...	...	110
	* 6	80	..	..	...	...	...	...	...	...	...	...	..	.	67	67
	* 7	85	...	...	...	...	...	...	...	...	...	..	..	.	8	8
	* 8	145	...	...	...	...	...	...	...	...	...	...	...	...	55	55
	* 9	155	...	...	..	...	...	...	...	104	104	..	...	...	16	16
Total ...	...	1,200	.	...	...	...	...	...	...	104	104	72	185	...	229	486
Missau	* 1	190	...	...	107	...	107	...	...	...	...	...	...	...	...	.
	* 2	277	...	...	245	...	245	...	...	...	...	...	...	...	...	.
	* 3	220	4	...	169	...	173	...	...	...	...	...	...	...	...	.
	* 4	180	20	...	103	...	123	...	..	...	...	...	..	...	.	...
	* 5	300	42	...	66	...	108	6	54	...	60	.	...	...	.	...
	* 6	200	..	...	...	...	...	...	...	...	...	8	...	...	...	...
	* 7	100	...	...	...	...	...	...	..	...	...	...	...	...	62	70
Total ...	...	1,527	66	...	690	...	756	6	54	...	60	8	...	...	62	70
Chátri	* 1	210	14	27	...	...	41	...	...	...	...	...	...	...	...	...
	* 2	254	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	* 3	122	14	16	...	7	37	...	8	.	8	...	...	...	...	...
Total ...	...	586	28	43	...	7	78	...	8	...	8	...	...	...	...	...
Kandsar	* †	173	...	...	130	...	139	...	..	.	...	...	..	...	..	...
Kopti	* † 1	133	...	...	...	...	...	...	..	...	.	1	75	...	19	95
	* † 2	74	...	...	...	...	..	...	...	...	.	..	60	...	...	60
	* 3	95	...	11	...	...	11	...	...	...	...	..	...	45	8	53
	* 4	104	...	24	...	...	24	...	...	...	...	..	...	24	..	24
Total ...	...	406	...	35	...	...	35	...	...	...	..	1	135	69	27	232
Asnári	* 1	99	...	...	...	...	...	...	...	...	.	56	.	...	...	56
	* 2	120	...	...	...	.	..	...	..	...	...	.	92	.	...	92
	* 3	170	...	..	...		..	...	...	...	..	36	64	...	...	100
Total ...	...	389	...	...	..		...	...	..	..	...	92	156	...	...	248

DIX D.

COMPARTMENT IN THE DEORÁN RANGE.

NUMBER OF TREES OF ALL KINDS PER ACRE IN STOCKED AREA.

Oak predominating.					*Miscellaneous.*									*Diameter Classes.*								
																III. Class.		II. Class.		I. Class.		
Oak.	Oak, deodár and others.	Oak, deodár, kail and others.	Oak, pines and firs.	Total.	Chir and oak.	Cypress.	Eurúsa and oak.	Kokat.	Total area stocked with forest.	Plantation.	Blanks covered with natural reproduction.	Blanks suitable for planting.	Unproductive ground.	Cliffs.	V. Class.	IV. Class.	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Total.
62	...	...	...	62	...	...	...	...	62	...	...	4	...	...	19	35	24	7	10	5	6	6	112
87	...	...	...	87	...	...	...	...	87	...	...	10	...	...	37	66	21	7	7	4	2	3	147
84	...	...	...	84	...	...	...	...	84	...	...	20	...	...	26	50	17	5	4	2	2	1	107
171	...	...	...	171	...	..	...	...	171	...	...	30	...	...	31	58	19	6	5	3	2	2	126
88	...	...	...	88	15 Chir only	...	...	...	103	..	3	..	...	...	15	17	8	3	5	2	8	2	60
60	...	...	...	60	..	...	54	...	114	.	...	60	...	...	183	181	7	1	...	..	...	...	372
47	...	...	...	47	...	...	...	..	47	..	...	182	...	5	144	93	4	1	...	...	.	...	244
.	...	...	...	...	...	...	51	...	51	8	..	1	...	5	165	136	20	1	4	...	1	...	328
47	...	...	...	47	..	...	51	...	98	8	...	10	..	5	155	117	12	1	2	...	1	...	288
55	...	...	...	55	...	...	...	...	55	...	..	16	27	...	158	145	32	3	4	1	2	1	346
25	...	...	...	25	...	..	..	...	25	...	...	30	77	...	18	72	33	8	9	5	4	4	153
70	...	...	..	70	...	..	...	...	72	...	...	30	4	...	67	88	21	6	4	4	3	3	196
57	...	...	..	57	...	..	...	...	57	...	..	40	17	..	16	58	22	6	4	3	2	2	113
80	...	...	..	88	..	...	...	..	80	...	...	..	...	..	14	32	12	4	4	2	2	2	72
55	...	...	...	55	...	..	..	..	55	...	..	10	5	...	21	45	11	5	3	3	1	3	92
287	...	...	...	287	...		...	...	289	...	...	110	103	.	29	57	18	6	4	3	2	2	121
...	...	...	...	...	...	...	...	...	138	105	11	...	...	...	140	105	27	1	13	1	13	1	301
.	...	...	...	...	...	..	..	...	92	36	34	...	...	...	112	86	26	2	12	1	12	1	252
6	...	...	...	6	.	.	..	..	35	127	...	33	6	...	106	116	31	4	11	3	14	2	286
15	35	...	...	50	...	...	...	...	125	60	.	25	...	...	65	73	19	2	9	2	10	2	182
13	..	...	...	13	...	.	...	..	141	34	...	46	10	..	152	80	20	2	13	1	11	1	280
...	...	...	...	...	...	..	.	...	39	2	.	54	16	.	160	93	25	4	13	2	17	2	317
...	...	...	...	...	..	...	.	...	37	8	...	202	48	...	227	80	19	3	12	2	17	1	361
34	35	...	..	69	...	..	...	...	607	372	45	380	79	...	127	88	23	2	12	1	12	2	267
.	...	...	20	20	...	11	...	...	120	...	18	27	..	...	101	64	30	3	8	1	8	2	217
30	...	...	...	30	.	30	...	.	104	...	.	14	7	..	58	38	16	1	5	1	4	1	124
...	...	...	34	34	..	28	...	..	88	..	70	7	10	...	103	63	38	3	12	2	14	3	228
...	...	...	...	...	...	13	.	.	81	...	.	24	..	...	27	16	14	1	7	1	5	1	72
...	...	...	...	.	.	7	...	...	126	...	..	5	34	...	75	36	15	1	11	1	9	2	151
...	...	...	...	.	...	2	.	.	69	...	...	11	..	...	123	35	14	1	5	1	6	2	187
...	...	...	32	32	.	.	.	.	40	...	40	5	.	...	125	54	20	3	6	1	9	2	220
.	...	..	78	78	..	..	...	..	133	...	9	..	3	e..	80	24	10	1	4	...	4	1	124
...	...	..	4	4	...	...	...	..	124	...	30	1	...	.	69	32	19	2	6	1	5	1	135
30	...	...	174	204	...	91	...	...	885	...	167	94	54	...	81	39	18	2	7	1	7	2	157
...	...	...	...	...	...	1	...	...	108	...	45	13	15	9	102	49	10	1	12	1	18	2	204
...	...	..	...	...	...	4	...	...	240	...	16	5	2	5	76	40	14	...	11	1	12	2	156
...	...	..	...	...	...	6	...	...	179	...	22	16	...	3	89	50	20	1	12	1	11	2	186
...	...	...	...	...	...	...	...	...	123	...	44	6	3	4	86	36	14	1	10	1	11	2	161
...	...	...	...	...	...	...	...	...	228	...	16	16	1	39	19	31	11	1	6	1	9	1	79
60	.	.	...	60	.	...	...	...	175	...	...	25	...		35	33	12	2	5	1	9	3	100
105	...	...	...	106	...	...	...	...	120	...	...	22	...	18	17	19	9	1	4	1	7	2	60
66	16	38	...	120	.	...	...	...		..													
231	16	38	...	285	.	11	...	...	1,182	...	143	103	31	78	58	37	15	1	9	1	11	2	194
...	...	..	125	125	...	.	.	...	166	...	...	18	...	26	35	27	9	1	0	1	8	...	87
...	...		...	..	108	.	.	...	108	...	...	114	...	32	19	22	14	1	8	...	9	...	73
...	...	...	42	46	1	...	...	...	92	...	...	14	16		57	44	11	2	3	1	5	1	124
4	...	...	167	171	109	...	...	...	366	...	...	146	16	58	86	30	11	1	9	1	8	1	94
4	..	...	...	...	...	...	...	...	139	28	4	...	2	...	225	74	18	1	8	1	8	2	327
...	.	...	...	...	...	...	...	...	95	..	30	4	4	...	63	41	17	2	13	2	16	3	157
...	...	...	...	...	...	...	...	...	60	...	12	2	...	...	105	43	12	1	8	1	10	4	183
...	...	.	..	...	...	...	...	...	66	...	12	16	...	1	95	44	13	2	12	1	20	3	190
...	...	...	2	2	...	...	...	...	48	...	40	11		5	102	46	13	1	7	1	9	2	178
...	...	...	...	..	.	...	...	...	209	...	94	33	4	6	87	43	15	2	10	1	10	3	177
.	...	.	2	2	...	...	...	...	56	...	...	34	...	...	135	88	29	2	11	2	4	1	272
...	...	..	...	...	...	...	...	...	92	...	13	15	...	...	50	43	16	3	10	2	8	4	136
..	...	...	.	.	...	...	...	...	102	...	12	56	...	...	72	65	28	5	16	3	14	4	207
2	...	...	..	2	..	...	...	...	250	...	25	105	...	...	78	62	24	4	13	2	9	3	195
2	...	...	...	2	..	...	...	...															

NUMBER OF ACRES STOCKED WITH DIFFERENT SPECIES OF TREES IN EACH

Name of block.	Number of compartment.	Area.	*Deodar predominating.*					*Kail predominating.*				*Fir predominating.*				
			Deodár.	Deodár and kail.	Deodár, kail and other species.	Deodár, oaks and firs.	Total.	Kail.	Kail, deodár and other species.	Kail, oaks and firs.	Total.	Fir.	Fir and deodár.	Fir, deodár, kail and other species.	Fir, pines and oaks.	Total.
Marauwa	1	197	5	...	16	...	21	..	41	...	41	...	...	...	...	..
	2	188	..	..	...	...	...	...	..	...	...	.	...	...	...	...
	3	168	.	..	...	...	...	..	...	...	...	..	...	...	...	...
	* 4	89	...	...	..	..	...	..	...	...	...	.	...	...	...	...
	5	108	..	...	...	...	..	...	.	...	...	...	...	...	...	...
Total ...		640	5	...	16	...	21	...	41	...	41	...	...	...	...	...
Thena	*†1	58	..	...	...	...	...	...	...	...	.	5	...	...	...	5
	*†2	62	.	...	...	...	...	...	...	...	...	61	...	...	..	61
	*†3	211	.	...	..	...	...	...	...	...	...	...	...	.	165	165
	*†4	180	.	.	...	...	...	...	...	...	...	.	.	...	...	...
Total ...		461	..	...	...	...	...	...	...	...	...	66	...	..	165	231
Kutulár	* 1	186	...	..	...	...	...	...	..	...	..	6	...	...	8	14
	* 2	85	..	..	...	...	...	...	...	...	.	1	...	..	...	1
Total ...		271	...	...	...	...	..	...	...	...	..	7	...	...	8	15
Kanjátra	*†1	134	...	...	...	...	...	...	...	...	...	..	..	...	92	92
	*†2	87	..	...	...	..	..	...	..	...	.	4	...	5	62	71
	*†3	176	...	...	...	...	...	...	..	..	..	...	...	97	4	101
	*†4	208	...	...	...	..	..	...	...	85	85	...	...	...	4	4
	*†5	43	...	...	...	...	...	...	.	..	..	.	...	...	27	27
Total ...		643	..	...	...	...	...	...	...	85	85	4	...	102	189	295
Jálli	* 1	208	...	...	...	..	...	...	...	...	...	.	...	...	..	...
	* 2	97	..	...	...	...	...	...	...	...	...	...	.	...	57	57
	* 3	70	..	...	...	...	...	...	...	...	...	...	.	...	...	...
	* 4	215	...	...	.	...	...	...	...	...	.	4	.	...	156	160
	* 5	70	...	...	...	...	...	...	...	...	.	.	...	..	63	63
	* 6	72	...	...	...	...	...	...	...	...	...	4	.	...	14	18
	* 7	97	...	...	...	...	.	...	...	...	...	1	...	...	49	50
	* 8	55	...	...	...	...	...	...	...	...	..	...	.	...	..	...
	*†9	58	...	...	...	...	.	...	...	...	..	..	...	...	.	...
Total ...		937	...	...	...		...	..	...	...	...	9	...	...	339	348
Darna	* 1	112	..	..	..	..	...	...	...	..	...	...	...	...	..	...
	* 2	105	...	...	...	...	...	..	...	...	...	...	...	...	...	...
	* 3	150	...	...	...	...	...	...	..	...	..	...	...	...	...	...
	4	259	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...		726	...	...	...	...	...	...	...	...	...	.	...	..	...	...
Mathangra ..	*†1	159	...	...	...	...	..	...	..	...	...	...	...	...	...	...
	*†2	150	...	...	...	...	...	...	..	...	...	...	...	...	...	...
	*†3	182	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*†4	135	...	...	...	..	...	...	...	...	...	...	...	...	...	...
	*†5	60	.	..	...	...	...	...	...	...	...	.	...	...	.	...
Total ...		686	...	...	...	...	...	...	...	...	...	...	...	...	..	..
Mohna ...	*†1	45	...	...	..	...	...	...	...	...	...	..	...	...	...	...
	2	250	...	...	...	...	...	...	...	...	...	...	...	...	.	...
	*3	150	...	...	...	..	...	...	...	...	...	...	...	...	...	...
	*†4	105	...	..	...	...	...	...	...	...	...	...	...	...	10	10
	*†5	45	...	...	...		...	...	...	...	...	...	...	...	.	...
	*†6	55	...	...	...	...	..	...	...	...	...	...	...	..	20	20
	*†7	41	...	...	...	..	..	...	...	...	...	...	...	...	2	2
	*†8	55	.	...	...	..	...	...	...	...	...	...	...	...	40	40
	*†9	105	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*†10	50	..	...	...	.	...	...	.	...	...	...	...	...	39	39
	*†11	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*†12	68	..	..	..	...	...	...	...	...	...	...	...	...	25	25
	*†13	47	...	..	...	...	...	...	...	...	...	...	...	...	40	40
	*†14	30	...	...	...	...	...	...	...	...	...	...	10	...	...	10
Total ...		1,071	...	...	...	...	..	...	...	...	...	...	10	...	176	186

BENGAL SECRETARIAT LIBRARY

DIX D—*(continued).*

COMPARTMENT IN THE DEORAN RANGE.

Oak predominating.					Miscellaneous.										No. of trees of all kinds per acre in stocked area.										
															Diameter Classes.										
																	III Class.		II Class.		I. Class.				
Oak.	Oak and deodár and others.	Oak, deodár, kail and others.	Oak, pines and fir.	Total.	Chír and oak.	Cypress.	Burdus and oak.	Kohat.	Total area stocked with forest.	Plantation.	Blanks covered with natural reproduction.	Blanks suitable for planting.	Unproductive ground.	Chahs.	V. Class.	IV. Class.	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Total.
...	...	...	...	...	...	...	...	...	62	...	27	17	13	23	230	52	20	3	7	1	8	3	333
...	...	45	23	68	...	...	...	...	68	...	10	45	...	15	48	29	26	3	13	1	15	6	138
...	...	...	22	22	...	...	...	...	22	...	...	52	94	...	22	16	14	2	9	1	15	4	83
...	...	...	...	...	...	...	...	...	...	...	...	39	50	...	...	...	...	...	...	...	...	...	...
...	...	87	87	...	...	...	...	...	87	...	...	21	...	...	6	7	6	1	2	...	2	...	24
...	...	45	132	177	...	...	...	...	239	...	37	170	157	27	81	28	18	2	8	1	10	2	150
...	...	...	18	18	...	...	...	...	23	21	4	8	...	2	90	44	21	8	8	2	9	1	184
...	...	...	...	...	...	...	...	...	61	...	...	1	...	...	57	58	27	1	15	1	9	1	169
...	...	99	...	99	...	...	...	...	165	...	26	20	...	...	87	37	15	2	7	1	12	2	103
...	...	...	...	...	...	...	...	...	99	...	31	...	...	...	55	65	14	3	9	3	11	5	135
...	...	99	18	117	...	...	...	...	348	21	61	29	...	2	73	40	17	3	9	2	11	3	157
...	...	...	96	96	...	...	...	...	110	...	...	...	76	...	81	96	20	6	5	2	2	1	213
...	...	...	24	24	...	...	...	...	25	...	...	...	60	...	220	120	21	9	2	1	...	...	388
...	...	...	120	120	...	...	...	...	135	...	...	...	136	...	108	101	20	7	4	2	1	1	244
...	...	...	...	...	...	...	...	...	92	...	14	28	...	...	71	50	31	4	15	1	7	1	180
2	...	...	...	2	...	...	...	...	73	...	2	12	...	...	100	38	26	2	17	2	10	2	198
...	...	...	...	...	...	...	...	...	101	9	46	20	...	...	68	40	22	4	14	3	12	7	170
28	...	...	28	...	...	...	...	...	117	...	78	8	...	...	113	50	13	5	6	4	4	4	199
15	...	...	15	...	...	...	...	...	42	...	...	1	...	...	101	59	31	3	18	2	7	2	223
45	...	...	...	45	...	...	...	...	425	9	140	69	...	...	90	47	23	3	13	3	3	4	190
...	...	...	107	107	...	...	...	...	107	...	...	36	41	19	58	74	17	4	6	2	4	2	167
...	...	...	...	...	...	...	...	...	57	...	...	25	15	...	47	49	15	3	6	2	3	2	127
...	...	...	6	6	...	...	...	...	6	...	...	38	26	...	103	100	31	3	10	1	9	2	259
...	...	...	2	2	...	...	...	...	102	...	...	32	15	6	61	34	23	1	10	1	6	1	137
...	...	...	7	7	...	...	...	...	70	...	...	...	...	...	120	40	31	1	7	1	4	...	204
...	...	...	10	10	...	...	...	...	28	...	...	21	23	...	334	93	24	4	10	1	3	1	470
...	...	...	37	37	...	...	...	...	87	...	...	...	...	...	142	69	33	2	12	1	3	1	263
...	...	...	12	12	...	...	...	...	12	...	...	43	...	...	205	80	38	7	6	1	...	...	436
...	...	...	57	57	...	...	...	...	57	...	...	1	...	...	178	54	31	4	9	2	2	1	231
...	...	...	238	238	...	...	...	...	586	...	...	196	130	25	108	55	25	2	9	1	4	1	205
104	...	...	...	104	...	...	...	16	120	...	...	05	4	23	48	82	16	6	4	3	2	1	164
58	...	...	...	58	...	...	...	8	66	...	...	39	...	...	19	45	12	5	5	3	3	3	95
82	...	...	...	82	...	...	...	27	109	...	...	24	...	17	19	38	13	4	6	2	5	2	84
...	...	...	...	...	...	...	...	...	...	...	...	...	259	...	...	...	...	...	...	...	...	...	...
244	...	...	...	244	...	...	...	51	295	...	...	128	263	40	32	58	14	6	5	2	3	2	122
32	...	...	...	32	...	...	...	...	32	25	...	05	37	...	18	33	14	1	6	1	5	2	70
84	...	...	...	84	...	...	...	...	84	17	7	37	5	...	47	65	19	3	6	1	3	1	144
130	...	...	...	130	...	...	...	...	130	...	...	40	12	...	75	04	15	3	6	1	4	2	169
70	...	...	...	70	...	...	...	...	70	...	9	21	35	...	12	19	9	1	5	1	4	2	53
43	...	...	...	43	...	...	...	...	43	...	...	17	...	...	39	35	13	3	5	2	5	3	98
359	...	...	...	359	...	...	...	...	359	42	16	180	89	...	46	49	14	3	5	1	4	2	124
45	...	...	...	45	...	...	...	...	45	...	...	...	...	...	35	27	14	5	6	3	2	2	941
12	...	...	...	12	...	...	...	...	12	...	...	118	120	...	42	128	51	10	15	6	8	6	266
78	...	...	...	78	...	...	...	...	78	...	...	50	32	...	68	55	22	7	9	3	5	4	173
...	...	...	89	89	...	...	...	...	89	3	...	3	...	...	150	46	28	1	12	1	6	1	146
...	...	...	45	45	...	...	...	...	45	...	...	...	...	...	101	98	30	4	13	3	6	3	313
...	...	...	6	6	...	...	...	...	20	...	6	28	...	...	95	43	17	3	9	3	5	3	178
...	...	...	11	11	...	...	...	...	13	12	...	2	14	...	217	82	43	9	17	5	8	4	385
...	...	...	...	...	...	...	...	...	40	6	...	9	...	...	144	58	24	3	14	3	7	4	259
...	...	...	35	35	...	...	...	...	35	32	...	13	25	...	98	46	23	2	9	1	6	2	187
...	...	...	...	...	...	...	...	...	30	4	...	7	...	...	134	73	27	3	13	3	8	3	264
2	...	...	7	9	...	...	...	...	9	6	...	...	10	...	102	53	22	4	10	4	4	2	201
...	...	...	...	...	...	...	...	23	48	15	...	5	...	...	127	57	15	1	6	1	8	1	216
...	...	...	...	...	...	...	...	...	40	5	...	2	...	...	96	41	21	3	12	1	6	1	180
...	...	...	...	...	...	...	...	...	10	18	...	...	2	...	105	62	33	4	13	3	5	2	227
187	...	...	193	380	...	...	...	23	589	101	6	232	193	...	113	56	24	4	11	2	6	2	218

NUMBER OF ACRES STOCKED WITH DIFFERENT SPECIES OF TREES IN EACH

Name of block.	Number of compartment.	Area.	*Deodár predominating.*					*Kail predominating.*				*Fir predominating.*				
			Deodár.	Deodár and kail.	Deodár, kail and other species.	Deodár, oaks and firs.	Total.	Kail.	Kail, deodár and other species.	Kail, oaks and firs.	Total.	Fir.	Fir and deodár.	Fir, deodár, kail and other species.	Fir, pines and oaks.	Total.
Durání	*1	244	.	...	...	...	...	...	...	...	..	...	...	...	13	13
	*2	130	...	...	.	..	...	..	.	39	39	.	..	...	46	46
	*3	57	.	...	.	.	.	..	.	...	...	...	.	...	..	...
	*4	153	...	...	..	.	..	...	...	...	...	.	1	...	.	1
	*5	205	28	...	.	.	28	...	.	.	.	...	109	.	..	109
	*6	92	...	...	...	.	..	...	...	...	..	49	...	...	...	49
Total	..	881	28	...		...	28	..	...	39	39	49	110	..	59	218
Ekra	1	164	...	...	...	...	...	..	...	..	...	...	. .	...	...	...
	2	130	..	...	...	..	...	...	...	..	...	...		...	...	...
	3	62	...	...	...	...	...	...	...	...	...	...	..	...	...	...
	4	179	...	...	...	...	...	...	.	.	.	...	..	...	...	...
	5	266		...	...	...	...	...	...	...	...	38	..	...	19	* 57
	6	225		...	..	...	...	...	...		...	...	.	...	...	...
Total		1,026	..	...	...	...	...	...	...	...	...	38	...	...	19	57
Kulered	1	115	...	...	...	...	...	...	...	...	.	...	...	...	...	...
	2	130	..	.	...	...	...	...	...	...	...	...	...	...	...	...
	3	71	...	...	...	...	...	..	...	...	...	...	...	...	...	..
	4	59	.	...	...	...	...	...	...	...	...	...	...	...	...	...
	5	148	...	...	.	...	...	...	...	...	...	...	...	...	...	...
	6	77	...	...	...	...	...	...	...	...	...	...		...	...	...
Total	..	595	...	...	..	...	...	...	...	...	...	...	..	...	...	...
Amlokri	1	182	..	..	...	...	...	...	..	...	...	...	A.	...	...	...
	2	159	...	...	...	...	...	..	...	..	..	...	...	...	...	...
	3	177	.	.	.	...	...	..	...	...	...	...	...	...	..	...
Total		518	..	...	..	...	...	...	..	...	...	...	...	...	..	...
Dánda	*1	68	...	...	..	...	...	...	...	...	...	...	...	...	..	...
	*1&2	169	...	...	...	..	...	.	...	...	...	...	...	...	...	...
Total	...	237	...	.	. .	..	...	...	...	...	...	...	. .	...	...	...
Hejáwa	*1	90	..	. .	...	...	...	...	.	..	..	...	...	...	78	78
	*2	122	...	.	...	...	...	...	...	..	..	40	...	...	49	89
	*3	107	. .	...	...	..	...	...	...	..	...	79	...	...	22	101
	*4	124		...	...	...	...	...	...	...	...	74	...	...	32	106
	5	148	...	...	...	...	...	...	...	...	.	...	...	...	...	...
	*6	232	...	...	...	...	...	...	...	...	...	...	.	...	31	31
	*7&8	200	...	...	...	...	...	...	..	..	...	58	.	.	...	68
Total	..	1,041	...	...	...	...	..		...	...	...	201	...	...	212	473
Haliána	*1	150	1	...	...	..	1	...	...	..	...	...	...	.	70	70
	*2	117	...	...	.	...	...	.	...	...	...	...	...	...	84	84
	*3	100	...	...	...	(	0	...	...	..	...	.	...	...		..
	4	448	...	...	...	...	...	...	...	...	...	..	..	...	.	...
Total		815	1	..	.	0	7	..	..	..	...	...	...	...	163	163
Pandáwa	*1	145	...	...		...	...	..	..	...	..	...	..	..	70	70
	*2	121	..	..		...	...	...		...	...	.	...	...	51	51
	*3	138	...		...	...	...		...	..	.	.	...	...	...	...
Total	..	404	...	.	.	...	...	.	...	...	...	...	..	.	121	121
Rikta	*1	178	...	...	...	10	10	...	...	...	...	..	...	...	...	...
	*2	90	...	.	..	18	18	..	.	..	...		...	..	...	...
	*3	268	...	.	...	27	27	..	..	...	...	...	67	...	...	67
Total	..	536	..	...	.	55	55	.	...	...	..	...	67	...	...	67
Rajamára	*1	195	5	...	...	...	5	...	...	...	..	...	161	...	...	161
	*2	108	..	..	...	...	...	...		19	19	..	...	...	27	27
	*3	123	.		...	...	...	...		...	...	.	79	...	...	79
Total	..	426	5	...	...	...	5	...	...	19	19	...	240	...	27	267

DIX D—(*continued*).

COMPARTMENT IN THE DEODAR RANGE.															NO. OF TREES OF ALL KINDS PER ACRE IN STOCKED AREA.								
Oak predominating.					*Miscellaneous.*										*Diameter Classes.*								
																	III. Class.		II. Class.		I. Class.		
Oak.	Oak and deodar and others.	Oak, deodar, kail and others.	Oak, pines and firs.	Total.	Chir and oak.	Cypress.	Burins and oak.	Kokar.	Total area stocked with forest.	Plantation.	Blanks covered with natural reproduction.	Blanks suitable for planting.	Unproductive ground.	Chaks.	V. Class.	IV. Class.	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Total
...	...	..	31	31	..	...	...	..	44	...	75	97	6	22	158	44	32	7	14	4	15	7	281
...	...	..	11	11	...	...	...	...	96	...	23	11	...	.	74	19	10	3	4	1	6	3	120
..	...	48	...	48	...	..	...	..	48	...	9	...	...	.	31	17	12	1	4	1	5	1	72
..	...	...	48	48	.	...	...	..	49	...	22	32	80	..	41	24	11	1	4	1	4	2	88
...	...	...	...	...	...	...	...	..	187	..	6	12	50	...	142	57	22	2	12	2	11	3	251
...	...	.	. .	...	..	...	...	..	40	...	7	1	35	...	102	52	33	2	14	1	12	4	281
...	...	48	90	138	...	...	...	...	423	...	142	153	141	32	100	38	19	2	8	2	9	3	288
45	...	...	...	45	...	.	...	.	45	. .	...	28	91	...	50	93	36	10	12	5	8	0	220
54	...	...	...	54	...	...	...	...	54	...	.	8	68	.	48	42	14	2	12	1	5	1	125
20	...	..		20	...		..	...	20	...	..	..	42	...	41	42	25	3	11	2	10	2	137
97	...		...	97	...	...	...	...	97	...	...	35	33	14	114	81	24	7	8	4	4	3	245
32	...	...	...	32	.	...	..	...	80	...	...	6	150	15	121	75	22	4	(	3	3	1	235
67	...	...	19	76	...	...	...	...	26	...	...	50	84	10	95	88	34	4	10	2	8	2	243
305		...	19	324	...	...	...	..	381	...	...	127	474	44	91	75	25	5	1	3	5	1	215
...	..	..	.	..			..	86	86	..	...	7	22	...	67	70	20	6	7	3	4	3	186
40	...	...		40	...	...	...	.	40	...	...	15	75	...	75	54	14	3	6	2	4	2	160
49		...	..	49	..		..	...	49	...	...	22	.	...	111	101	22	5	7	2	7	3	280
17	...	...	...	17	..	...	...	.	17	..	.		42	...	68	75	17	6	5	3	4	2	180
52	.	...	33	85	.	...	...	..	85	...	...	52	6	..	52	53	20	3	4	2	8	1	140
53	...	...	..	53	.	.	...	..	53	...	...	9	...	15	96	102	28	4	11	3	6	2	254
211	...	...	33	244	...	. .	86	...	330	...	...	105	145	15	70	75	22	4	8	2	6	2	190
155	...	..	...	155	...	...	...	...	155	..	...	20	1	..	57	40	20	2	4	1	5	2	145
123	..	.	...	123	...	...	..	...	123	..	..	23	13	..	26	29	20	3	(	2	10	2	91
42	...	...	..	42	...	...	...	...	42	..	...	14	110	2	36	42	24	4	1	4	6	2	127
320	...	...	. . .	320	...	...	...	...	320	...	..	63	133	2	78	40	13	2	(	1	0	2	148
...	...	...	...	...	...	...	61	...	61	...	. .	2	..	5	200	100	57	7	15	2	7	1	402
133	...	..	...	133	...	...	...	..	133	...	...	28	8	...	31	33	22	4	4	2	5	2	107
133	...	...	...	133	...	...	61	...	194	.	..	30	8	5	82	85	38	6	10	2	5	1	227
...	...	...	...	...	...	...	...	..	78	...	...	21	...	...	115	50	16	3	(	2	3	2	201
...	...	...	.	...	...	. .	.	...	89	...	.	33	. .	...	68	19	13	2	11	2	3	1	120
.	...	...	...		...	...	...	...	101	...	...	6	...	...	84	44	25	1	15	1	14	2	187
7	...	...	..	7	. .	..	.	...	113	...	..	6	5	...	58	42	18	4	8	2	5	1	141
112	..	..	..	112	..	..	..	..	112	...	..	30	...	.	25	42	17	2	(	1	7	1	106
35	...	...	80	124	...	..	...	...	155	...	.	37	39	1	194	107	29	5	8	2	3	1	345
54	...	..	18	72	.	.	...	...	140	...	...	58	1	...	252	106	39	5	12	4	0	5	485
208	..	...	107	315	...	...	...	...	788	...	...	197	55	1	127	65	24	4	1	2	7	3	241
9	...	...	37	46	...	...	..	...	126	...	8	10	...	6	87	44	16	3	(	2	8	2	168
...	...	..	13	13	.	...	..	...	97	...	8	9	...	3	140	72	20	3	8	2	1	2	257
...	...	...	...	...	...	..	...	...	6	...	...	60	34	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	.	...	...	...	...	...	...	...	448	...	98	30	21	3	10	2	34	13	160
9	...	...	50	59	...	...	.	...	229	...	16	79	482	9	108	55	18	3	8	2	9	2	206
...	...	...	63	63	...	.	...	...	133	...	...	12	...	...	121	69	30	2	7	1	9	2	241
...	...	...	27	27	...	...	...	...	78	...	6	20	3	14	258	117	40	2	10	2	13	4	453
27	...	...	...	27	...	.	...	...	27	...	6	63	42	...	78	44	19	3	5	2	9	3	163
27	...	...	90	117	...	...	...	...	238	...	12	95	45	14	161	82	32	2	10	1	10	3	301
...	11	...	. .	11	...	...	...	...	21	...	2	96	57	2	133	99	12	2	8	2	10	3	200
..	...	...	2	2	...	...	...	...	20	...	15	33	22	...	76	43	16	3	9	3	8	5	165
...	...	...	9	9	...	...	...	...	109	...	25	70	70	...	110	72	23	2	9	1	15	3	235
...	11	...	11	22	...	...	...	...	144	...	42	109	149	2	109	63	21	2	9	2	13	3	222
10	...	...	.	10	...	. .	..	...	176	2	4	8	5	...	185	87	21	3	0	2	8	2	317
...	...	...	...	...	...	...	...	...	40	...	39	10	13	...	130	97	19	3	8	3	13	7	211
18	...	...	...	18	..	...	...	...	97	...	11	...	15	...	178	90	27	3	12	2	10	4	326
28	...	...	...	28	...	...	...	...	319	2	54	18	33	...	175	80	21	3	10	2	9	3	303

NUMBER OF ACRES STOCKED WITH DIFFERENT SPECIES OF TREES IN EACH

Name of block.	Number of compartment.	Area.	*Deodár predominating.*					*Kail predominating.*				*Fir predominating.*				
			Deod r.	Deodár and kail.	Deodár kail and other species.	Deodár, oaks and firs.	Total.	Kail.	Kail, deodár and other species.	Kail, oaks and firs.	Total.	Fir.	Fir and deodár.	Fir, deodár, kail and other species.	Fir, pines and oaks.	Total.
Leguna ...	*1	97	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*2	157	...	...	...	...	..	...	69	...	69	...	14	...	...	14
	*3	193	2	.	51	2	55	...	...	...	...	..	...	..	...	...
	*4	228	...	...	...	18	18	...	...	...	...	...	139	...	...	139
	*5	155	1	...	...	20	21	...	...	...	...	...	64	..	...	64
	*6	39	..	...	...	...	...	...	..	...	...	...	...	...	...	..
	*7	60	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...		924	3	...	51	40	94	...	69	...	69	...	217	...	...	217
Konsin ...	*1	40	26	...	...	...	26	...	...	...	...	...	...	...	...	...
	*2	105	43	...	...	...	43	...	...	...	...	...	...	...	...	...
	*3	50	12	...	...	...	12	...	...	...	...	...	7	...	. .	* 7
	*4	56	...	...	30	15	45	..	..	...	..	...	...	...	...	..
	*5	100	...	...	65	...	65	...	...	...	...	...	...	...	..	...
	*6	18	...	...	...	...	...	...	...	...	...	...	...	...	..	...
	*7	134	..	64	4	. .	68	...	...	...	...	...	...	...	...	...
	*8	26	..	18	...	...	16	...	...	...	...	...	...	...	...	...
Total ...		529	81	80	99	15	275	...	...	...	...	...	7	...	...	7
Karáli ...	*1	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	1a	151		..	...	...	...	...	...	...	...	...	...	...	...	...
	*2	155		43	...	77	120	...	...	...	...	...	...	...	...	...
	*3	98	...	...	...	...	...	...	...	75	75	...	...	...	..	..
	4	103	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...		580	...	43	...	77	120	...	...	75	75	...	...	...	...	...
Siari ...	*1	90	...	...	...	...	...	...	...	...	...	..	...	...	...	...
	*2	76	...	...	...	18	18	...	...	...	...	...	...	...	...	...
	*3	150	...	...	...	...	...	...	...	...	...	..	...	...	...	118
	*4	115	...	...	...	...	...	...	...	...	...	87	118	...	...	87
Total ...		431	...	...	...	18	18	...	...	...	...	87	118	...	...	205
Gutugád ...	*1	40	...	...	...	10	10	..	...	...	...	...	...	...	15	15
	*2	92	...	...	...	...	...	...	...	...	...	91	...	...	...	91
	*3	179	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	4	46	...	. .	...	...	...	...	...	...	...	...	...	...	...	...
	*5	100	...	...	..	...	...	...	...	...	...	...	42	..	...	42
	*6	56	...	...	...	26	26	...	...	...	...	...	...	...	...	...
Total ...		513	...	...	...	36	36	...	...	...	...	91	42	...	15	148
Bhujkoti ...	*1	31	...	...	...	...	...	...	...	...	...	...	22	...	...	22
	*2	138	...	...	...	...	...	...	. .	...	...	...	94	...	...	94
	*3	161	...	...	...	...	...	...	...	...	...	...	158	...	...	158
Total ...		330	...	...	...	...	...	...	...	...	...	..	274	...	...	274
GRAND TOTAL ...		22,242	232	201	995	726	2,154	0	172	322	501	709	1,595	176	1,811	4,381

Panlkánal ... 891 } Estimate of areas under different types not made
Karamba ... 2,155 }

* Protected from fire
† Ditto from grazing } if only

DIX D.—(*continued*).

COMPARTMENT IN THE DEOBAN RANGE.															NO. OF TREES OF ALL KINDS PER ACRE IN STOCKED AREA.										
Oak predominating.					*Miscellaneous.*										*Diameter Classes.*										
Oak.	Oak and deodár and others.	Oak, deodár, kail and others.	Oak, pines and firs.	Total.	Chir and oak.	Cypress.	Burin and oak.	Kokat.	Total area stocked with forest.	Plantation.	Blanks covered with natural reproduction.	Blanks suitable for planting.	Unproductive ground.	Chaks.	V. Class.	IV. Class.	III. Class.		II. Class.		I. Class.				
																	Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	Total.		
4	...	...	...	4	...	...	...	...	* 4	...	...	31	62	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	12	...	95	...	...	62	...	...	78	52	14	3	0	2	8		105		
...	...	...	...	...	...	...	...	...	55	...	...	61	7	70	99	50	12	3	8	2	12		188		
...	...	...	...	...	...	...	...	...	157	2	2	48	8	...	204	118	28	3	13	2	15	5	383		
...	...	...	...	...	...	...	...	...	97	...	7	39	12	...	202	99	30	2	13	1	12	3	302		
...	...	...	12	12	...	...	...	...	35	...	...	2	2	...	99	59	12	2	3	1	1	1	177		
...	...	...	35	35	...	...	...	...	36	...	12	10	2	...	59	43	12	5	7	3	8	5	142		
...	...	30	...	30	...	...	...	...																	
4	...	30	47	87	...	...	12	...	* 479	2	27	253	93	70	147	82	22	3	10	2	11	4	281		
...	...	...	...	...	...	...	...	...	25	...	...	13	2	...	36	27	23	...	11	...	15	...	112		
...	...	...	...	...	...	...	...	...	43	10	30	16	6	...	106	38	15	...	11	...	17	...	186		
...	...	...	...	...	...	...	...	...	19	...	...	20	11	...	120	51	18	1	11	1	17	2	220		
...	...	...	...	...	...	...	...	...	45	4	3	2	...	2	137	74	21	1	10	1	17	2	263		
...	...	...	...	...	...	...	...	...	65	20	9	6	...	...	107	41	14	3	7	2	15	4	193		
...	...	...	...	...	...	...	...	...	7	10	...	1	...	...	146	78	35	10	18	5	38	9	326		
...	...	7	...	7	...	...	...	...	68	36	22	7	...	1	248	102	13	1	9	1	1	1	380		
...	...	...	...	...	...	...	...	...	16	...	10	...	...	...	94	42	9	...	6	...	6	1	158		
...	...	...	...	...	...	...	...	...																	
...	...	7	...	7	...	...	...	...	289	80	74	64	19	3	139	60	16	2	9	1	14	2	242		
...	...	11	...	11	...	...	...	...	11	...	5	6	...	...	46	60	17	3	11	2	10	2	157		
6	...	30	...	42	...	...	...	...	42	...	...	46	...	62	83	64	18	4	8	1	9	2	192		
...	...	...	...	...	...	...	...	...	120	...	6	2	...	7	106	55	12	2	7	1	5	1	189		
8	...	...	...	8	...	...	...	...	83	...	...	10	...	5	75	46	14	4	5	2	5	2	153		
...	...	...	26	26	88	...	...	...	114	...	...	25	...	24	10	20	12	1	7	1	5	...	68		
14	...	47	26	87	88	...	...	...	370	...	11	109	...	99	65	45	14	1	7	1	0	1	142		
16	...	...	...	16	...	...	...	...	16	...	...	55	12	7	31	29	19	3	13	2	28	7	132		
2	...	...	...	2	...	...	...	...	20	...	...	44	12	...	77	41	15	3	11	2	15	4	168		
...	15	...	...	15	...	...	...	...	138	11	...	6	...	...	112	50	21	3	11	2	14	4	226		
22	...	...	...	22	...	...	...	...	109	2	...	4	...	...	171	89	21	1	7	1	14	1	305		
40	15	...	...	55	...	...	...	...	278	12	...	109	24	7	128	68	20	2	10	2	15	3	248		
14	...	...	...	14	...	...	...	...	30	...	...	1	...	...	232	95	30	4	14	2	7	2	395		
...	...	...	...	...	...	...	...	...	91	...	...	1	...	...	185	85	27	1	11	1	10	2	322		
...	18	151	...	170	...	...	...	...	179	...	...	...	...	...	61	34	18	2	9	2	11	3	140		
...	...	...	...	...	...	...	45	...	45	...	...	...	...	1	62	56	31	5	8	3	7	3	175		
9	24	...	...	33	...	...	...	...	75	...	...	...	25	...	131	52	18	1	11	1	15	3	232		
...	...	...	...	...	...	...	...	...	26	...	29	1	...	...	164	69	24	3	14	2	23	6	305		
23	42	151	...	226	...	...	45	...	455	...	29	3	25	1	118	50	23	2	10	2	12	3	226		
..	5	...	...	5	...	...	...	...	27	...	...	4	...	...	208	87	32	5	15	3	9	3	362		
25	...	...	17	42	...	...	...	...	130	..	...	2	...	...	141	43	20	3	9	2	10	4	232		
...	...	...	...	...	...	...	...	...	158	.	...	3	...	...	148	42	20	3	12	2	13	3	243		
25	5	...	17	47	...	...	...	...	321	...	...	9	...	...	150	40	21	3	11	2	11	4	248		
3,203	124	481	1,535	5,343	212	102	309	74	13,074	678	1,319	3,529	3,100	545	...	...	...	...	...	...	...	...	...		

* portion of a compartment is protected from fire; no mark has been put against it.

Name of block.	No. of compartment.	Number of acres of different types of forest in each compartment of the Deoan range.									Number of trees of all kinds per acre in the area stocked with forest.							
		Area.	Sál with some (mostly native) bakli and grasia.	Kokat with some bakli and grasia (mostly native).	Kokat with some bakli, grasia and bakla (mostly native).	Kokat with only a few scattered bakla or grasia.	Kokat.	Total area stocked with forest.	Blanks fit for planting.	Unproductive ground.	Chaks.	IV. Class 6"—12".	III. Class, 12"—18".		II. Class, 18"—24".		I. Class over 24."		Total.
													Sound.	Unsound.	Sound.	Unsound.	Sound.	Unsound.	
		Acres.	KÁLSI FOREST.																
Pánjgáon (part of) ...	*1	53	2	31	...	20	...	53	...	...	...	87	12	3	2	2	1	2	109
	*2	56	3	33	...	20	...	56	...	...	...	63	10	2	2	1	1	1	80
	*3	29	5	...	24	...	...	29	...	...	...	57	8	2	2	1	1	1	72
	*4	32	9	...	23	...	...	32	...	...	...	99	18	6	4	2	2	2	127
	*5	56	3	...	21	25	4	53	... 3	...	...	103	8	2	2	1	1	2	119
	*6	80	...	56	24	...	...	80	...	...	...	22	3	1	1	...	...	...	27
Total	...	306	22	120	92	65	4	303	3	...	...	66	9	2	2	1	1	1	82
Rara bágh ...	*1	116	34	46	36	...	...	116	...	...	...	146	10	2	1	...	...	...	159
	*2	91	2	50	39	...	...	91	...	...	...	128	12	3	2	...	1	...	146
	*3	104	...	30	74	...	...	104	...	...	...	63	4	1	...	...	...	...	68
	*4	140	...	...	...	...	...	...	...	140	...	...	...	...	...	...	...	...	...
Total	...	451	36	126	149	...	...	311	...	140	...	113	8	1	1	...	...	...	123
Haripúr ...	*1	43	5	...	38	..	...	43	...	...	...	61	9	2	1	1	...	2	76
	*2	26	4	...	22	...	...	26	...	...	...	212	31	7	8	2	1	2	258
	*3	45	11	...	34	...	...	45	...	...	...	62	10	2	1	1	1	...	77
	*4	53	18	...	35	...	...	53	...	...	...	100	12	3	2	1	...	1	119
	*5	66	34	32	...	...	...	66	...	...	...	124	8	2	1	2	...	2	139
	*6	37	5	...	32	...	...	37	...	...	...	177	17	4	2	3	1	4	208
	*7	53	10	...	43	...	...	53	...	...	...	71	7	1	1	...	...	1	81
	*8	77	...	...	77	...	...	77	...	...	...	44	5	1	1	1	1	1	54
	*9	46	...	...	23	...	23	46	...	...	...	65	6	1	1	...	...	...	73
	*10	75	...	75	...	...	...	75	...	...	...	91	5	1	1	1	1	2	102
	*11	77	...	77	...	...	...	77	...	...	...	89	8	2	1	1	1	...	102
	*12	99	...	...	99	...	...	99	...	...	...	130	8	1	1	1	1	1	143
	*13	54	...	...	54	...	...	54	...	...	...	219	12	3	3	2	1	3	243
	*14	49	49	...	...	...	...	49	...	...	...	160	16	2	2	1	1	1	183
	*15	49	14	...	25	...	10	49	...	...	...	78	10	2	1	1	1	1	94
	*16	109	35	...	43	...	31	109	...	...	...	88	11	2	2	1	1	3	108
	*17	98	3	...	...	92	...	95	3	...	...	42	5	1	1	...	1	1	51
	*18	102	...	...	...	75	...	75	9	...	18								
Total	...	1,158	188	184	525	167	64	1,128	12	...	18	105	9	2	1	1	1	2	121
Grand Total	...	1,915	246	430	766	232	68	1,742	15	140	18	99	9	2	2	1	1	1	115

APPENDIX E.

Area of Forest taken from each khat in the Deoban Range.

Number	Name of Khat.	Land under cultivation.	Land occasionally cultivated.	Village forest or uncultivated waste.	Government Forest. I. Class.	Government Forest. II Class closed.	Government Forest. II Class open.	Government Forest. Total.	Approximate area of each khat.	Percentage of closed forest to total area of khat.	Name of Forests Blocks.
1	Haripúr Biás ...	168	109	645	*Nil.*	*Nil*	1,268	1,268	2,190	*Nil.*	Haripúr Biás.
2	Pánjgáon	725	154	5,078	*Nil.*	*Nil.*	1,775	1,775	7,732	"	Thaina, Pánjgáon, Bara bágh.
3	Bána	425	65	2,645	...	..	991	991	4,126	"	Amláwa and Dhaira.
4	Seli Gothán	562	69	4,190	...	..	16	16	4.837	"	Amláwa (part of)
5	Seli	1,092	250	8,418	*Nil.*	*Nil.*	328	328	10,088	"	Kua, Singhori (part of) Raura.
6	Koru	858	153	5,040	*Nil*	*Nil.*	45	45	6,096	"	Singhori (part of)
7	Silgáon . ..	857	175	5,870	...	..	45	45	6,947	"	Amláwa (part of)
8	Semálta	346	47	1,914	*Nil.*	*Nil.*	*Nil.*	*Nil.*	2,307	"	
9	Athgáon Chándu ...	622	167	3.291	"	"	"	"	4,080	"	
10	Bangáon .. .	380	138	7,085	"	"	"	"	7,603	"	
11	Udpálta . ..	498	160	2,156	"	"	"	"	2.814	"	
12	Birmau		106	2,299	"	"	"	"	2,810	"	
13	Bamtár . .	1,048	231	8,750	*Nil.*	567	521	1,088	11,118	5·1	Matkángra, Kurwá, Kóta, Bándlá.
14	Mohna	216	95	3,266	*Nil.*	671	952	1,623	5,260	12 7	Mohna, Ekra (part of) Hajáwa (part of) (232 acres). (320 acres).
15	Dwár	390	248	4,062	"	451	2,342	2,793	7,519	6	Ekra (part of), Kulered, Amlokri, Dánda, Hajáwa, (part of).
16	Bislár	267	188	6,196	*Nil*	750	3,332	4,082	8,487	8 8	Duliána, Pandáwa, Rikta, Hajáwa (part of), Karamba (72 acres.)
17	Kailo	287	56	3,831	529 (143 acres open to cattle.)	378	3,689	4,596	8,940	10·1	Konain, Karáli, Bajamára, Duráni. (except 27 acres)Legúna, Siari, Gutugád, Bhuj koti (218 acres), Pani-ká-nál (250 acres).
18	Missau	550	100	2,936	1,220	665 (of this 227 acres have been re-opened departmentally.	3,697	5,582	9,890	19	Inári, Moila, Marauwa (part of Missau, Chátri, Kopti, Asmári, Thona. (223 acres). (503 acres). (276 acres). Kanásar, Bodiar (part of) (1,047 acres).
19	Bharam	640	146	12,553	*Nil.*	*Nil.*	935	935	14,276	*Nil.*	Inári, Moila (part of). (238 acres) (679 acres).
20	Dhanau	462	85	5,830	416	701	2,308	3,475	9 852	11 3	Bodiár, (part of), Inari (part of), Marauwa (part of), Kuintár, Kanjátra, Jádi (4 acres) (364 acres)
21	Dissau	349	250	8,249	*Nil.*	*Nil.*	*Nil.*	*Nil.*	9,448	*Nil.*	Darná, Duráni (part of) (27 acres) *Nil.*

APPENDIX F.

Changes in the outer Forest boundary.

Name of Block.	Locality.	Area excluded from forest.	Nature of changes.
		Acres.	
Missau ...	Near Mashak along the gád.	...	Pillar No. 26 to be removed from field and placed 55 links nearer the forest. Pillars 29 to 32 to be removed, the Mashak gád forming the boundary. Position of pillars 43, 44, 45, 46 and 50 to be changed, so as to exclude all cultivation; from 50 boundary to follow small nala to the gád.
Ghátri ...	Nargarh khera	727	Position of pillars 20, 21 and 22 to be changed.
,, ...	Devri near Forest chauki.		Position of pillars 35 and 36 to be changed.
,, ...	East of Koti ...		Position of pillars 3, 4, 5 and 8 to be altered slightly so as to exclude all cultivation.
,, ..	Mashak and Binal gáds. .		Pillars 52 to 67 to be altogether removed, and pillar No. 68 to be removed to the junction of the new fire line with the Binal gád, and pillar 51 to be placed at the junction of the other new fire line with the Mashak gád
,, ...	Near Mangtár ...	3.	A cut line to be made between pillars 84 and 85, so as to exclude some fields Pillar No. 87 to be removed to a new place 5m. 33chns. west of pillar 86. A line to be cut from 86 to 87 (new) thence to pillars 13 and 12 of 1 class forest and on to pillar 88 of outer boundary.
Marauwa ...	Near Mangtár .	.	A line to be cut between pillars 91 and 92, excluding some small fields. Pillar No. 87 to be removed to a new position close to the Barni nala, and a new pillar 93a to be built between pillars 93 and 93.
Marauwa, Durání, (1 acre.)	Ain ká thát and Durání dhár.	12	Pillar No. 107 to be moved 6 m. 67 chns. towards No. 108. Also pillar No. 109 to be shifted and new pillars 110, 111, 112 and $\frac{113}{1}$, to be built, the latter on the site of old pillar No. 110
,, ...	Above Mangár ...	8	Position of pillars No. 56, 57, 58 and 60 to be changed.
,, ...	Above Jádi (Pabaká khera,)	27	Position of pillars No 62 to 68 to be changed
Darna ...	Gobrás dhár	3.	Position of pillar No. 20 to be changed and No. 19 to be removed altogether.
,, .	Gobrás khera. .	...	Position of pillar No 39 to be slightly changed:
Matkángra ...	...	13	A straight line to be cut from pillar No. 34 at Morrow's neck to the cantonment boundary pillar No. 142, and pillar No. 35 to be placed where the new fire line crosses the ridge above pillar No. 142, the boundary running along this fire line to pillar $\frac{36}{1}$. The following outer boundary pillars to be built in place of new chak pillars, and present outer boundary pillars Nos. 2 and 3 to be removed altogether.
			New chak pillars. To be replaced by outer boundary pillars.
			Nos.
			1 to be removed altogether ..
			2 ..
			3 4
			4 3
			5 2
			6 1.
			Outer boundary No 5 to be removed and placed where No. 4 is now, pillar No. 6 to be removed, No. 7 to become No. 6, No. 8 to become No. 7. No. 9 to become No. 8, and No 9 to be placed in new position on ridge above the road A line to be cut so as to exclude a few fields above the grazing path to the west of the Biti gád, and a fire line to be cut all round from $\frac{50}{1}$ to No. 9.
Mohna ...	...	25	From pillar 12 to Chopka gadera and down the gadera to the Agar gád following that stream to the lower Mohna road and thence continuing by the present boundary.
Ekra . .	Koya ká kabr ...	0	Pillar No. 3 to be placed on the Phaphrota gád and two new pillars Nos. 3a and 4a to be built.
,, ...	Bangi ser ...	17	Pillar No. 2 to be removed 6·80 chs. up the Phaphrota gád and pillar No. $\frac{1}{1}$ to be placed on the Rowana dhár.
,, ...	Sabági ..	2	Pillar No. 4 to remain, and a new pillar 4a to be built 6·40 chs. off towards No 3 which must be shifted a chain so as to exclude cultivation.
,, ...	Karai near Buniára. ...	3	Pillar No. $\frac{30}{1}$ to be moved 71 links up the path to Sewa láni, and pillar No. $\frac{35}{1}$ to be destroyed altogether.
Amlokri .	Sila-thát ...	2	Pillar No. 33 to be moved 11 chs. 12 lks. up the Bhaun gád and two new pillars 32a and 32b to be built
Hajáwa .	Hajáwa gád . .	2	Pillar 13 removed and re-erected close to the gád.
Duliana ...	Bangu that . .	2.	Pillar Nos 7 and 8 to be removed, No 7 being placed on the dhár 6 chs. 5 lks. from the present No. 8, and No. 8 to be placed on Moti dhár 9 chs. 28 lks from new No. 7.
Duliána (3 acres) and Rikta (2 acres).	Near Khatwa ..	7	Two new pillars 17a and 17b to be built between pillars 17 and 18. Also pillars No. 18 and 19 to be re-erected at new places.
Rajamára. ...	Chaunri khera ...	21	Pillars Nos. 14 and 15 to be re-erected at new places
Kalsi .	Khádár khera ...	7.	Pillar No. 18 to be built on site of an old zila pillar near a nála, and the boundary to follow this nála to pillar No. 2 which must be removed from its present position and placed just over the nála A cut line to be made between pillars 7 and 8 excluding all cultivation and present pillar No. 1 to be changed to No. 11.
,, ...	Along the Jamna .	...	All forest land between pillars 3 and 4 as well as the former pillar itself has been washed away by the river; between pillar No. 1 and the bridge, there is some land of doubtful ownership which Lachman Das siyána might be permitted to cultivate.
Total ...	...	887	* These areas are insignificant.

APPENDIX G.

Joint Memorandum on Forest Rights in Jaunsár Báwar by MR. ROSS, C.S., MR. BAKER, C.S., *and* MR. FISHER, *Officiating Conservator of Forests, dated January*, 1885.

1. In second class forests the villagers may generally cut their annual allotment of inferior trees according to list given in the record-of-rights, where and when they like; but in thirteen khats near Chakráta, a list of which is given in the Appendix, where the maintenance of a steady fuel supply for the troops is of the first importance, all right-holders' trees shall be marked in October by the Divisional Forest Officer, or by his orders, and removed by the villagers whenever they like, within a period of twelve months. In case any marked trees have not been removed within this period, they will be counted again towards the next year's annual grant.

2. For right-holders, deodár, pines, and firs, which may be classed as valuable timber, will be marked in October in all the khats by the Divisional Forest Officers, or by his orders. No unmarked and valuable timber may be removed by a right-holder

3. All deodár trees given to right-holders must be sawn up and not cut into planks with the axe.

4. Villagers have no rights whatever in first-class reserves, and at present there is an ample supply of deodár in second-class reserves, where the deodár trees for the right-holders will be marked exclusively. It will be the duty of the Forest Department to work the second-class reserves in such a way that the annual supply of right-holders' deodár may be maintained.

5. Major Bailey's memorandum on the forest rights in Jaunsár Báwar, dated 20th February, 1884, contains a concise and accurate account of these rights, which have also been noted in the record-of-rights in each khat.

6. In consequence of the large area of second class forest, which has been closed in the vicinity of Chakráta, it is expedient that, in future, no further area should be closed unless a corresponding area is opened, in which reproduction has been effected, and in which the young growth is no longer in danger of serious injury by cattle and sheep.

In order that the villagers may not be unduly inconvenienced by this practice, the consent of the Superintendent of the Dún should be obtained, and any case of difference of opinion between the Conservator of Forests and the Superintendent of the Dún should be referred for the decision of Government.

List showing the khats in Jaunsár Báwar near Chakráta Cantonment:—

1. Dissau.	5. Bislár.	9. Bangáon.
2. Dhanau.	6. Dwár.	10. Bamtár.
3. Kailo.	7. Mohna.	11. Sell.
4. Lakhau.	8. Barasua.	12. Koru.
		13. Missau.

APPENDIX H.

Fixed annual grant of wood to the villagers of Jaunsár Báwar sanctioned by G. O No. 21, dated 9th January, 1879.

Number.	Name of khat.	Name of syána.	Green deodár trees.	Dry deodár karis and planks, &c.	Rai and morinda.	Kali.	Logs of jogan.	Mora.	Ban.	Saral.	Leuri.	Bamboos.	Haldu.	Sál.	Sain.	Tilkil.	Jhukaria.	Sándan.	Singar.	Kaudur.	Ringalá.	Dhaura.	Khair.	Remarks.
* 1	Haripúr Bára ...	Sankar Dás ...	...	...	...	...	...	...	...	...	...	400	2	6	...	...	...	16	...	...	...	...	8	Kurwas. Ballis.
* 2	Bána ...	Kaniya and Masiya ...	4	200	...	...	100	...	...	...	...	...	10	10	10	5	...	20	25	...	...	..	10	400 40
* 3	Bisshil ...	Raj Mali ...	4	200	...	...	200	...	...	...	...	...	...	...	...	25	20	20	5	...	100	...	...	...	sanctioned by G. O.
* 4	Silgáon ...	Hari Ram ...	4	200	...	...	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	No. 643, dated 9th
* 5	Athgáon Chándu ...	Subla ...	3	200	2	...	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	July, 1883.
* 6	Kothi ...	Rati Ram ...	1	100	...	...	50	...	...	...	...	...	...	...	...	...	...	...	...	...	100	...	...	...	
* 7	Maleta ...	Kishan Sing ...	1	100	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	100	...	...	
* 8	Dissau ...	Charna and Daib Sing ...	8	200	17	...	200	5	10	...	...	...	...	...	...	...	...	...	...	...	100	...	...	
* 9	Dhanau ...	Mutru ...	5	300	8	...	...	12	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
* 10	Bharam ...	Hari Rám ...	6	300	4	4	100	12	24	...	2	...	...	...	...	...	...	...	...	...	1,000	...	...	
* 11	Misau Masak Khag ...	Rám Sing ...	3	100	4	4	...	6	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
* 12	Ditto Koti do. ...	Rám Dat ...	3	100	15	4	...	6	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
* 13	Kailo ...	Hemchand, Dharam Sing ...	7	150	40	12	...	12	24	8	...	...	...	...	...	...	...	...	...	...	...	...	...	
14	Lakhau ...	Chait Rám ...	4	200	10	10	..	4	4	40	...	...	...	...	...	...	...	...	...	...	...	...	...	
15	Bánadhár ...	Kachlu and Mutru ...	3	200	...	...	...	4	4	60	...	...	...	...	...	...	...	...	...	...	...	...	...	
16	Phanyár ...	Banchlu ...	2	150	...	30	...	20	40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
17	Silgáon ...	Rám Sing and Atta ...	5	250	...	15	...	20	50	80	...	...	...	...	...	...	...	...	...	...	...	...	...	
18	Báwar ...	Karam Sing ...	6	300	...	60	...	40	100	140	...	...	...	...	...	...	...	...	...	...	...	...	...	
19	Deogar ...	Karam Sing and Jalpu ...	6	200	10	100	...	60	120	200	...	...	...	...	...	...	...	...	...	...	...	...	...	
20	Baunder ...	Putalu ...	4	200	5	...	100	12	30	20	...	...	...	...	...	...	...	...	...	...	...	...	...	
21	Panjgáon ...	Dalip Sing ...	1	100	2	...	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
22	Charrari ...	Dilip Sing ...	1	...	20	...	50	4	10	5	...	...	...	...	...	...	...	...	...	...	...	...	...	* Conservator No.
23	Taplár ...	Bija and Bhawaniya ...	2	200	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	57, dated 19th July,
24	Athgáon Uperli ...	Hari Rám ...	3	150	30	...	400	8	8	8	...	...	...	...	...	...	...	...	...	...	...	...	...	1880.
* 25	Bialár ...	Karam Dás and Lokhna ...	6	300	40	...	...	20	40	30	...	...	...	...	...	...	...	...	...	...	...	...	...	
* 26	Dwár ...	Lal Sing ...	4	150	10	...	400	30	30	...	...	...	...	...	...	...	...	...	...	1	...	...	...	
* 27	Mohna ...	Sis Ram ...	4	200	...	...	400	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	† 2 moru granted
28	Barasuwa ...	...	1	50	...	50	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	to this khat by G. O.
* 29	Bangáon ...	Choni and Rup Sing ...	4	200	2	...	50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	No. 527, dated 11th
* 30	Bamtár Kurwa Khag ...	Choni ...	3	100	3	2	...	2	5	...	...	...	...	...	...	...	...	...	...	...	100	...	...	June, 1883.
* 31	Ditto Newar do. ...	Deb Sing ...	2	100	* 5	3	100	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
* 32	Birmau	Sawala ...	3	200	...	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
33	Seli ...	Moti Ram ...	3	200	...	...	60	2†	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
34	Koru ...	Rám Das ...	6	200	...	...	80	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
35	Bailár ...	Sair Sing ...	4	200	...	...	80	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
36	Phartár ...	Kalmo and Karm Dás ...	4	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
37	Lakhwár ...	Aust Rám and Bhop Sing ...	4	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
38	Samálta ...	Jowala and Rup Sing ...	4	200	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
39	Udpálta ...	Madiya ...	3	200	...	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
40	Seli Kuthan ...	Rup Sing and Govind Dás ...	4	200	...	...	150	...	...	...	...	...	...	...	...	...	...	20	...	...	...	...	4	20 khair granted
* 41	Panjgáon	Man Sing ...	3	200	...	...	100	...	...	...	...	500	20	30	60	30	30	60	20	...	200	...	20	instead, of 20 bakli
42	Gods' villages, temples, &c.	...	2	...	...	...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	by Conservator, No.
		Total ...	150	7,100	247	294	3,240	287	544	541	2	900	30	48	70	60	50	136	50	1	1,800	4	38	18, dated 2nd May, 1885.

* Khats which obtain their free grants from the Deoban range.

APPENDIX I.

Arrangements for supplying free grants of Forest produce for the next 20 years.

Name of forest blocks from which the grant is to be made.	Number of trees to be given annually.		Name of khats who are to receive the grant.
	Deodár—		
	Green trees.	*Dry pieces.*	
Moila, Missau and Asmári	35	1,850	Bharam, Bána, Bissáhil, Silgáon, Athgáon-chándu, Koti, Maleta, Dissau, Missau (Mashak) and Dhanau (Lohári).
Chátri, Kopti and Marauwa, 1 and 2	8	100	Missau (Koti)
Thona, Kanjátra and Duráni	3	150	Dhanau (Jadi)
Bajamára and Leguna	11	600	Mohna, Bailar and Phartár.
Mohna	1		Mohna.
Karáli and Siári	7	150	Kailo.
Gutugád and Bhujkoti	14	750	Bamtár, Birmau, Dwár and Bangáon.
Karámba 5 and 6	12	650	Taplár, Rangau, Uperli—Athgáon, Bislár
Páni-ká-nál	12	400	Soli and Koru.
Deoban Range .	98	4,650	
Bomnai, Riknár and Majbíra	24	1,250	Lakhwár, Semálta, Seli—Gothán, Pánjgáon, Barasuwa, Baunder, Udpálta and Chultári.
Jako, Lokár, Sangráni and Dábar	7	400	Lakhau and Banadhar.
Hariánta	7	400	Phanyár and Silgaon.
Sangered, Panchkoti	6	200	Báwar.
Sansog, Dádi, Mudhaul	6	200	Deogár.
Any forest	2	...	For gods.
Total for other parts of Jaunsár .	52	2,450	
	Kail—		
Moila	4		Bharam
Missau	4		Missau (Mashak)
Kopti, Chátri and Marauwa	4		Do. (Koti)
Konain and Karáli	12		Kailo
Kanjátra and Duráni	5		Bamtár.
Total ...	29		
	Chir—		
Karáli	8		Kailo
	Cypress—		
Moila	2		Bharam.
	Fire—		
Moila	8		Bharam.
Missau	4		Missau (Mashak)
Kopti	4		Missau (Koti)
Asmári	8		Dhanau (Lohári)
Jádi	2		Koti.
Mohna	10		Mohna.
Kanjátra	9		Dhanau (Jadi).
Duráni	10		Bamtár and Birmau
Konain, Karáli, Siári, Legúna and Bajamára ...	15		Kailo.
Duliána and Karámba	30		Bislár.
Hajáwa, Ekra, Kulered	40		Dwar
Total ...	140		

APPENDIX I

Arrangements for supplying free grants of Forest produce for the next 20 years—(concluded).

Name of forest blocks from which the grant is to be made	Number of trees to be given annually	Name of khats who are to receive the grant
	Moru—	
Darna and Matkángra	7	Maleta and Dissau
Jádi and Durání	13	Dhanau (Jádi) Bamtár and Seli
Mohna	5	Mohna *
Missau Asmári Chátri, Kopti and Marauwa	12	
Moila and Inári	18	Bharam and Dhanau (Lohári)
Sári Konain, Bajamára and Leguna	12	Kailo
Pandáwa, Dulliána Rikta and Karámba	20	Bistár
Hajáwa Ekra, Kulered, Amlokri and Dánda	30	Dwar
Total	117	
	Bán—	
Moila and Inári	36	Bharam and Dhanau (Lohári)
Missau	12	Missau (Mashak)
Chátri and Marauwa	12	Do (Koti)
Darna and Jádi	24	Makta, Dissau and Dhanau (Jádi)
Kota and Bandla	5	Bamtár (Narayn)
Kurwa	5	Do (Kurwa)
Karáli Sári Konain and Leguna	24	Kailo
Hajáwa, Ekra Kulered, Dánda and Amlokri	30	Dwár
Total	148	
	Jogan—	
Koti, Bindrauli	1 190 (loads)	Bina Bisáhul Silgáon, Athgaon Chándu Koti, Dissau, Bharam Birmau, Udpálta
Bhujkota and Gutugád	400	Dwar
Bajamára and Legána	450	Mohna, Bamtár and Barásuwa
Total	2 040	
Name of trees—	*From Kálsi forest*—	
Sál	48	Haripúr Bára Bána Birsahul
Haldu	32	Panjgáon and beli Gothan
Sain	70	
Bákli	60	
Bokain	50	
Sandan	136	
Singár	50	
Khair	38	
Dhaura	4	
Kurwas	400	
Ballis	40	
Bamboos	900	

* Also 1700 ringáls which can be taken from any forests

APPENDIX J.

Complete List of Cattle in Jaunsár Khats (Deoban Range) from former returns.

Number.	Name of khat.	Cattle.						Grazing area including waste lands and Government open forest.	Number of acres per grazing unit.	Number of grazing units per adult cultivator.	Remarks.
		Cows.	Bullocks.	Buffaloes.	Sheep.	Goats.	Number of grazing units.				
1	Haripúr Bisa ...	130	109	30	* 25	22	794	1,013	2·4	.	* In these khats there is closed Government forests.
2	Pánjgáon ...	750	610	41	497	868	4,910	6,853	1·4	17·8	
3	Bána ...	319	307	...	228	773	2,566	3,686	1·4	13·1	† In these khats there is no Government forest at all.
4	Seli Gothau ...	544	488	14	308	715	3,733	4,206	1·1	10·9	
5	Seli ...	1,218	1,026	48	923	1,292	8,065	8,740	1·0	13·2	
6	Koru ...	547	367	73	297	724	4,921	5,085	1·0	9·4	
7	Silgáon ...	1,096	527	...	671	1,777	6,505	5,915	0·9	...	Can graze in Athgáon-Chandu.
†8	Semálta ...	316	312	...	233	259	2,062	1,914	0·9	...	Can graze in Silgáon.
†9	Athgáon-Chandu ...	347	200	...	199	620	2,186	3,291	1·5	...	Ditto.
†10	Bangáon ...	1,015	357	...	324	1,203	5,152	7,085	1·4	...	
†11	Udpalta ...	335	383	27	129	454	2,398	2,156	0·9	...	Can graze in Silgáon and Bamtár.
†12	Birmau ...	683	311	4	329	525	3,399	2,200	0·7	...	Can graze in Bamtár.
*13	Bamtár ...	777	901	12	646	1,231	6,074	8,488	1·6	11·3	Can graze in Seli, Koru, Athgáon, Chandu, Dhanau and Dissau.
*14	Mohna ...	444	250	...	488	544	2,767	4,244	1·5	20·8	
*15	Dwár ...	467	225	...	637	729	3,201	6,429	2·0	24·4	Can graze in Bislár.
*16	Bislár ...	1,038	327	21	1,167	1,332	5,956	8,032	1·3	25·3	
*17	Kailo ...	537	277	...	806	828	3,671	7,684	2·1	23·4	Ditto.
*18	Missau ...	483	402	...	1,660	1,827	5,699	7,360	1·3	20·9	Can graze in Kailo and Bharam.
19	Bharam ...	450	510	...	1,500	2,000	5,900	13,490	2·3	10·7	
*20	Dhanau ...	557	321	...	1,761	1,684	5,640	8,188	1·5	19·3	Can graze in Bamtár and Missau.
†21	Dissau ...	752	452	...	634	1,623	5,317	8,240	1·6	18·9	Can graze in Seli, Bamtár and Dhanau
	Total and averages ...	12,805	9,102	289	13,516	21,090	90,916	126,263	1·4	16·7	
	Summary.										
	Khats with no Government forest.	...	...	...	...	...	...	...	1·2	...	A grazing unit is a sheep or goat.
	Khats with open Government forest only.	...	...	...	...	...	...	...	1·3	12·5	One buffalo = 5 sheep.
	Khats with open and closed Government forest.	...	...	...	...	...	...	...	1·6	20·8	One cow or bullock = 2·5 sheep.

APPENDIX J.

Number of cattle, sheep and goats which actually graze in the forests of the Deoban range. (*To this number ten per cent. should be added which would, give the number entitled to free grazing,* vide *G. O. No.* $\frac{446\text{-F}}{010\text{-}9}$, *dated 1st September, 1887.*)

Name of khat.	Name of village.	Number of buffaloes.	Number of cows and bullocks.	Number of sheep.	Number of goats.	Names of forest blocks grazed by cattle, sheep and goats.	Names of forest blocks grazed only by sheep and goats.	Time of grazing in the latter forests.	Remarks.
Haripúr Bláa.	Haripúr ...	12	33	18	...	Haripúr, Bláa and Khádar.	...	...	
	Bláa ...	1	40	7	1	Do. ...	...	.	
	Kálsi ...	17	116	...	21	Haripúr Bláa, Khádar, Amláwa, Pánjáon and Bara bágh.	...	...	
	Total ...	30	339	25	22	...	...	..	
Pánjgáon ...	Utail ...	8	34	...	...	Thaina ...	...	...	
	Bhora ...	...	22	...	...	do. ...	..	...	
	Kaha ...	1	30	...	...	Do. ..	..	...	Sheep and goats from this khat stated never to graze in Government forest.
	Punha ...	5	17	...	...	Do. ...	..	...	
	Nahra ...	6	27	...	...	Do. ..	...	...	
	Bagna ...	10	39	...	...	Do. .	...	...	No animals from the following villages ever graze in Government forests. Balnoo, Sarmana, Bhaurota, Pattiána, Khani, Bijao, Baita Kota, Samali, Kopti, and Bhondi.
	Bhuktari ...	. .	46	...	...	Amláwa ...	...	...	
	Khatari ...	8	25	...	...	Do. ...	. .	...	
	Thaina ...	1	48	...	...	Pánjgáon ...	...	...	
	Total ...	32	288	...	...	...	...	...	
Bana ...	Panjlya ...	...	24	20	70	Amláwa ...	Amláwa ...	June to September.	Sheep and goats from Mehiya, Bera, Bakaela and Jhutiya stated never to graze in Government forest.
	Dadhan ...	...	51	29	90	Do. ...	...	...	
	Chapnu ...	...	30	18	67	Do. ...	...	...	No animals from Saori, Thuran, Ramsar and Gedraya stated to graze in Government forests.
	Dhaira ...	...	49	27	110	Dhaira ...	...	...	
	Bera ...	...	9	...	...	Amláwa ...	...	...	
	Bakaela ...	...	7	...	...	Do. ...	...	...	
	Nichia ...	...	7	...	...	Moila and Dhaira,	...	...	
	Jhutaya ...	...	38	27	...	Do. ..	..	...	
	Chamri ...	...	5	...	26	Amlawa ...	Amláwa ...	Whole year ...	
	Khádar ...	...	72	...	. .	Dhaira and Khádar	...	...	
	Total ...	...	287	121	371	. .	...	...	
Seli Gothan.	Hamran ...	...	30	...	...	Pánjgáon ...	...	...	None of the other villages graze their cattle in Government forests, and sheep and goats from the two villages mentioned graze in zamíndári land only.
	Masrari ...	...	82	...	...	Kua ...	...	...	
	Total ...	...	112	...	...	...	...	.	
Seli ...	Chorkunawa,	...	125	25	77	Raura ...	...	...	None of the other villages graze their animals in Government forests.
	Kumna ...	...	39	12	8	Raura, Kua and Singori.	...	...	
	Ranari ...	...	60	16	...	Do. . .	...	...	
	Shwala ...	2	188	134	58	Do. .	...	...	
	Total ...	2	412	187	143	...	...	...	
Koru ...	Singori ...	14	218	18	105	Singori ...	...	...	Ditto.
	Dabra ...	1	119	20	80	Do. ...	. .	..	
	Badhoi ...	2	188	58	65	Do. ...	...	.	
	Total ...	17	525	105	250	. .	...	...	
Semálta ...	Jhusan ...	...	87	34	16	Raura ...	...	.	Ditto.
	Bamrar ...	...	34	4	2	do. .	...	..	
	Total ...	..	121	28	18	...	...	...	
Athgáon-Chándu.	Tipan ...	...	216	...	106	Kotha .	Kotha ..	Whole year .	Ditto.
Silgáon ...	Suro ...	...	175	30	325	Kotha .	...	April, July	
	Bhamari ...	...	74	...	98	do.	...	Whole year	
	Alsi ...	...	178	...	286	Amláwa ...	...	Do. .	Ditto.
	Bhanjra ...	...	59	45	...	Dhaira ...	..	November to April,	
	Kakari ...	...	51	...	...	Kotha ...	...	July to September,	
	Total ...	...	541	81	704	...	...	...	
Rangáon ...	Raura ...	..	20	3	10	Raura ...	...	Whole year ...	
	Mairawana ...	0	73	6	51	do. ...	..	Do. ...	
	Total ...	9	93	9	61	...	...	...	
Barásuwa ..	Barásuwa ...	6	100	12	83	...	..	May to October ...	Do not graze in Government forest. graze in zamíndári land, but cattle of Thana and Tungra villages graze in cantonments.

APPENDIX J

Number of cattle, sheep and goats which actually graze in the forests of the Pesban range. (To this number ten per cent should be added, which would give the number to entitled free grazing, vide *G O No* $\frac{440\ 1}{610\ 6}$, *dated 1st September*, 1887—(contd).

Name of khat	Name of village	Number of bad faloes.	Number of cows and bullocks	Number of sheep	Number of goats	Names of forest blocks grazed by cattle, sheep and goats.	Names of forest blocks grazed only by sheep and goats	Time of grazing in the latter forests.	Remarks.
BIRMAU							...		
BAMTÁR	Kotha		135	68	98	Kotha		Whole year	
	Chebhan		42			Kotha and Bándla,		March, October June and Septr,	No animals from other villages in this khat graze in Government forests
	Salga		41	.	.	Bándla		July, September	
	Boha		138	...	168			Whole year	
	Ashta		144		214			May, September	
	Kurwa		137		110			,,	Accustomed to graze in Kurwa block which has been closed
	Total		637	68	596				
KOTI AND MALETA									
MOHNA	Mohna			120	147			,,	
	Sujan		.	87					Cows and bullocks of Mohna, Sujan, Saura and Aunliya graze in zamindári land
	Saura			25		...	Ekra, Durán	.	
	Aunliya	..		30			Mohna Hajawa		
	Kandar	..	128	127	108	Ekra, Hajáwa 6 and Mohna 3	and Bajamára		Bajamára now closed as also part of Mohna and Hajawa.
	Indrauli		92	34	48	Do			
	Total		220	423	403				
DWAR	Khanar			126			Ekra Bajamára, Leguna.	.	Cows, bullocks and goats graze in zamindári land
	Samog ..			71			Kulered Hajáwa,	,,	Ditto
	Hanuna		81	145	87	Danda, Ekra, Kulered	Dánda Ekra Kulered, Hajáwa Amlokri		
	Midar	23	147	155	143	Amlokri, Ekra	Pandáwa, Rikta, Bajamára and Leguna.		
	Kurar		40	22	50		Ditto	,,	Cows, bullocks and goats graze in zamindári land
	Kanar			71			Ekra Kulered Amlokri Danda Hajawa, Dulána	.	
	Sichar			44				.	Ditto
	Manjgaon			134			Pandáwa, Rikta, Bajamára and Leguna.	.	
	Total	23	277	678	280	..	..		
BIELÁR	Khatwa		401	392	206				
	Khársi		312	312	390				
	Garí		62	10	49		.		
	Thanata	7	82	140	118				
	Joghon	13	279	225	291				
	Total	20	1,090	1,080	1,090	..			
KAILO ..	Konain		349	451	391	Leguna, Karali pt of Konain	Siari Gutugid, Bhujkoti		
	Amrár		34	8	8	Ditto	Ditto		
	Jhabrár		135	54	100	Ditto	Ditto		
	Kholra		40	64	54		Ditto		
	Kharoda			285			Ditto		
	Bantard			41			...		Cows, bullocks and goats graze in zamindári land
	Total		558	848	559		..	.	Ditto
MISSAU	Mashak		230	327	358	Missau and Asmári,	Moila, Missau and Asmari	March to December	
	Satar ..	..			38	Missau	Missau		
	Hartar			203	200				
	Rajanu		85	74	126	Moila	Moila and Missau,	.	
	Koti .		173	258	321	Chátri	Kopti and Thona,	.	
	Mangtár		44	62	72	Marauwa and Kopti	Kopti, Thona and Marauwa		
	Tidna		137	133	215	Chatri and Marauwa		.	
	Total	..	675	1057	1330				

APPENDIX J.

Number of cattle, sheep and goats which actually graze in the forests of the Deoban range. To this number ten per cent. should be added, which would give the number entitled to free grazing, vide *G. O. No.* $\frac{443F}{610-9}$, *dated 1st September,* 1887—(concld).

Name of khat.	Name of village.	Number of buffaloes.	Number of cows and bullocks.	Number of sheep.	Number of goats.	Name of forest blocks grazed by cattle, sheep and goats.	Name of forest blocks grazed by sheep and goats only.	Time of grazing in the latter forests.	Remarks.
Bharam ...	Gorchha ..	...	...	107	173	Moila ...	Moila ...	March to December.	
	Puning ..	...	...	29	28	..	.	...	
	Hágrul ..	...	148	269	297	..	Moila and Inári ...	...	
	Hulári ..	...	..	190	...	Moila and Inári . .	...	...	
	Kunwa ...	...	36	33	40	Moila ...	Moila ...	...	Proportion between sheep and goats estimated only.
	Kandai ..	...	169	260	253	...	...	. .	Ditto.
	Bajla ..	...	...	069	...	...	Moila and Inári ...	...	
	Pinjwa ...	...	...	...	.	...	...	.	Do not graze in Government forest.
	Jhalta ...	...	...	...	...	...		...	Ditto.
	Asoi ..	...	...	128	.	.	Moila and Inári ..	...	
	Adawa ...	...	50	98	90	Inári ..	...	...	
	Begiya ..	...	40	61	82	Moila .	Moila ...	...	
	Total ...	...	452	1.814	963				
Dhanau ...	Jádi ...	...	316	365	421	Jádi, Kutniár and Darna.	Jádi, Kutniár, Darna and Durání.	April to November.	
	Maugár ...	...	400	243	487	...	...	...	
	Sijla ...	...	78	70	77	...	...	. .	Proportion between sheep and goats estimated only.
	Lohári ...	...	393	1,194	1,350	Asméri, Missau and Kutniár.	Asméri, Missau, and Kutniár.	...	
	Jagtán ...	...	92	200	238	Inári ...	Inári, Asméri and Missau.	...	Proportion between sheep and goats estimated only.
	Burnila ...	...	...	...	..	...	...	...	Do not graze in Government forests.
	Total ...	...	1 285	2072	2,573				
Bisau ...	Dissau ..	...	..	72	...	Darna ...	...	...	
	Kája ...	...	...	422	..	...	...	...	
	Dadua .	...	89	125	166	...	...	...	
	Kitroli ...	...	...	30	...	...	...	...	Sheep belonging to two men only Nanku and Rup Singh.
	Sanola ...	...	...	08	...	...	...	...	Ditto Moti Ram and Ranjit.
	Matár ...	...	...	12	...	...	..	...	Ditto Churutu Kolta.
	Total ...	...	89	729	166				
Bissáhil ...	Sarali ...	...	82	50	54	Moila ...	Moila ..	Throughout year.	
	Danda ..	...	99	100	232	Ditto ..	Ditto ...	November to April.	
	Pihani ...	.	13	.	26	Ditto ...	Ditto ...	Throughout year.	
	Diman ...	...	120	...	221	Ditto ...	Ditto ...	February & April.	
	Total ...	...	320	150	533				
Phartár ...	Jhalin ...	2	19	...	...	Thaina	...	...	Goats graze in zamindári forest.
	Chunan ...	4	10	...	.	...	...	...	Ditto.
	Total ...	6	29	...	...				
Lakhwár...	...	...	...	...	...	...	...	...	Some cows and buffaloes graze in Cantonments on payment of dues.
Lakhau ...	Kistúl ...	...	68	152	178	Chauriabán and Dabar.	...	...	
	Sarni ...	...	24	61	44	Dabar and Lakna.	...	...	
	Kersri ...	...	6	11	16	Chauriabán and Kalaura.	Páni-ká-nál, Karamba.	April to June	
	Karni ...	...	6	3	6	...	Tutwa, Maura Bhujkoti.	September and October.	
	Dei ...	...	10	36	28	...	Siári and Gutugád.	...	
	Nimga ...	...	16	16	31	...	...	...	
	Dhugri ...	...	...	197	...	...	Dábar, Kalaura and Chauriabán.	July, August, November to March.	Cows, bullocks and goats do not graze in Government forests.
	Fenwa ...	...	.	3	...	...	...	...	
	Sanoi ...	...	...	30	...	...	...	...	
	Total ...	..	130	509	301				
	Grand Total Deoban Range.	152	8,005	10, 137	10,671				

APPENDIX K.

List of springs and watering places which have to be kept open in the closed Forests of the Deoban Range, sanctioned by Superintendent of the Dún's No. $\frac{750}{IV-A.-100}$, dated 5th April, 1882.

Forest Block.	Name of water.	To whom open.
Kanásar	Harogi	Koti, Túina and Mangtár villages.
Thoina	Sarsuti	Ditto ditto.
Kanjátra	Aksala iron spring	Jádi village and Aughánis.
Ditto	Durani	Jádi, Mangtár and Sijla villages.
Ditto	Kanjátra	All travellers and Aughánis.
Ditto ..	Deoban	Deoban forest establishment.
Konain	Nijor	Konain and Sainj villages (300 cows and bullocks only).
Hajawa	Hajáwa Gád	Baniás and other graziers.

Rights of way.

Forest Block.	Description of path, &c.	To whom open.
Bodiár ...	1. Path from Sikoli láni pillar No. 26 to pillar No 9 leading to Adáwa village ...	Men.
	2. Path from Kunnái láni and Dundanda down the Bodiár ravine passing out near pillar No. 7.	Do.
	3. Path from Bodiár forest to Bojia láni on one side and to Kináni láni on the other side.	Do.
	4. The Simla road from pillar No. 27 to pillar No. 28	Men and animals.
	5. Path from Bodiár forest hut to Moila temple	Do.
Kanásar ..	1. Path from pillar No. 23 to Kanásar hut and on to pillars No. 4 and 1 leading from Koti village to Jadi. The Forest Department, however, reserves to itself the right of closing this path during the dry season.	Do.
	2. The Missau road from pillar No 5 to pillar No. 32	Men and animals.
	3. The Koti, Tuina and Mangtár path from pillar No. 21 to pillar No. 18. This path leads to Khání pani, which is just outside the closed area, and it is fenced on the upper side by a wire fence to prevent cattle straying.	Ditto.
	4. A path from pillar No. 20 to Harogi páni for watering cattle	Ditto.
Mohna ...	1. The Tons-Chakráta road and the branch which goes from Deoban to Kaunti láni	Ditto.
	2. The lower Mohna road which forms the boundary of the closed portion ...	Ditto.
	3. A path down the Kua khad	Men.
	4. A path leading from the Tons-Chakráta road to Deoban water	Men and animals.
Mat kángra ...	All existing roads	Ditto.
Thoina ...	1. All existing roads and paths	Men.
	2. That portion of the Missau road which leads from Kopti to Sarsuti páni ...	Men and animals.
Kanjátra ...	1. All existing roads and paths	Men.
	2. The paths leading to Kabátra fields	Men and bullocks.
	3. The road leading from the Tons-Chakráta road to Durini dhár	Men and animals of Dhansu khat, buffaloes going to Tiuni.
Hajáwa ...	1. A path near the top of the ridge leading to Siláru-ká-páni	Men and animals (Dwár khát).
	2. The upper fuel road leading from near Siláru-ká-páni to the open portion north and west of compartment 4.	Men and animals of Khatwa and Baniána.
	3. A path along Hajáwa gád leading to the open portion of the block	Men and animals (Dwár khat).
Karamba ...	A portion leading to the temporarily open part of the Karámba block and passing through the closed portion.	Men and animals.
	1. A road leading from near pillar No. 15 to Tikadhár	Men.
	Ditto as far as Sardung dhár . .	Men and animals.
	2. A road leading from pillar No. 20 through Barai to pillar No. 3	Men going to and from Sainj village.
	3. The Choli road leading from pillar No. 20 to Choli thát	Men.
	4. The Kallo road leading from pillar No. 20 past the forest hut to pillar No. 36 ..	Men and animals.
	5. The Konain village road leading from pillar No. 25 to pillar No. 36	Ditto.
	6. A path leading down Sardung dhár from pillar No. 20 to pillar No. 5	Men.

APPENDIX L.

List of village lands (chaks) situated within the Deoban Range.

Serial number.	Name of chak.	Number of pillars.	Area.	Length of boundary.	Assessed cultivation included in chak.	Numbers of plots of cultivation in settlement kasra.	Compartment in which situated.
			Acres.	Miles. Chs.	a. r. p		
I	Dabon ...	9	0	„ 60	2 0 14	1208 1265 1267 1274	Missan 1.
II	Nawala and Bartai.	7	5	„ 34	1 0 11	915— 936	Do. 2.
III	Juwa	7	3	„ 21	„ 3 0	934- 943	Do. 3.
IV	Patwa ...	4	4	„ 27	1 3 39	1500 1586	Do 4.
V	Garán ...	5	5	„ 16	1 0 8	1129—1164	
VI	Jognal	7	4	„ 26	1 0 10	1155 1181	Do 5.
VII	Matuli ...	10	24	1 11	0 3 23	37— 101	
VIII	Asmári ...	8	6	„ 44	2 3 0	1- 36	
IX	Niari ...	6	18	„ 57	5 0 18	1809 - 1344	Do 7.
X	Jogta ...	10	25	„ 79	7 3 28	1345- 1389	Chatri 1
XI	Balai ..	4	3	„ 19	„ 1 16	1203 —1215	
XII	Sewa	5	7	„ 43	„ 2 12	1177—1202	Do. 2.
XIII	Ghatawa ...	7	13	„ 43	Unassessed.		
XIV	Nakhiár .	4	9	„ 30	D.t.o		
XV	Suyadhár ...	6	3	„ 40	1 0 6	78 84&89 92	Kopti 3 and 4
XVI	Chila	16	15	1 10	6 2 29	40 40 50 54 57 82 87 & 88	Kopti 4 and Marauwa 1.
XVII	Chila .	2	1	„ 7	„ 1 9	359 391	
XVIII	Simal ...	3	0	„ 32	5 1 9	409 458, 500 501	Marauwa 1
XIX	Auna ...	4	15	„ 69	3 1 23	1 30	Marauwa 2.
XX	Chonthina ...	3	2	„ 21	„ 2 1	1 8	Thona 1.
XXI	Donda ...	8	19	„ 60	8 3 17	2118 2220	Jadi 1.
XXII	Syáru ..	6	0	„ 39	„ 8 19	398 411, 416 128	Jadi 4.
XXIII	Darna I ...	2	3	„ 16	„ 1 32	164—177	
XXIV	Darna II ...	4	3	„ 32	„ 3 5	214—223	Darna 1.
XXV	Darna III	18	13	„ 95	1 1 30	68—222	
XXVI	Kawai ...	6	4	„ 45	...	..	
XXVII	Gobras ...	1	17	„ 34	..	.	Darna 3.
XXVIII	Leesta I	4	2	„ 17	..	.	Durani 1.
XXIX	Leesta II ...	1	2	„ 16	...	...	...
XXX	Durdui ...	15	18	1 4	...	.	
XXXI	Bel thát ...	3	1	„ 10	...	.	
XXXII	Chándurí .	4	2	„ 22	„ „ 32	925—936	Ekra 5.
XXXIII	Pani ka-bol	8	7	„ 40	„ 2 11	208—224	
XXIV	Bawawan I	6	17	„ 65	.	...	Do. 4 and 5.
XXXV	Bawawan II .	4	2	„ 24	„ „ 35	902—907	Do. 5.
XXXVI	Siwa	8	16	„ 52	3 2 17	1003—1066	Da 6 and Kulered 6.
XXXVII	Sabágí .	8	11	„ 42	3 2 0	1068—1132	Do 6.
XXXVIII	Tátra	6	3	„ 29	1 0 27	976—804	Kulered 6.
XXXIX	Begi ...	4	2	„ 22	Unassessed.		Amlokri 3.
LX	Kandiátra	4	1	„ 16	„ „ 30	1596—1600	Hajawa 6.
LXI	Bhaljotya	4	5	„ 36	...	.	Dánda 1
LXII	Banguthát .	2	6	„ 28	1 3 12	960—966	Duliána 1.
LXIII	Kharsal ...	4	3	„ 19	1 0 16	1588—1041	„ 2.
LXIV	Tipra ..	6	7	„ 39	2 1 39	1501—1521	Pandawa 2.
LXV	Kundia .	9	7	„ 60	1 2 27	1522—1537	
LXVI	Patiya thát .	2	2	„ 15	„ 1 28	1542—1544	Rikta 1.
LXVII	Kohan or Sera,	5	70	1 42	12 8 4	.	Legnua 3.
LXVIII	Dánda 1 ...	2	3	„ 24	2 1 20	1105—1111	Konain 4 & 7.
LXIX	„ II	4	7	„ 54	3 1 14	1112- 1130	Karáli 3.
LXX	Chinawa or Jal & Del.	9	38	„ 76	4 2 31	351—418 326—346	Do 1 & Sheri 1
LXXI	Gajrar ..	13	52	1 45	5 0 0	981—1104	Karáli 2 & 5.
LXXII	Gaura ..	4	5	„ 33	Unassessed		Do 4.
LXXIII	Kaner .	4	4	„ 32	Ditto		Do 5
LXXIV	Mohun ...	3	1	„ 9		..	Gutugád 3.
LXXV	Bel thát I ..	5	2	„ 24	.		Kurwa 2.
LXXVI	„ II ...	4	3	„ 35	.	..	
				KÁLSI FOREST.			
I	Punáha or Bayas.	5	18	„ 40	.		Thaina.
II	Bareta .	5	8	„ 35	..		Amláwa.
III	Chamrí ..	5	8	„ 31			...
IV	Beyáski	6	97	1 3			Haripur.
V	Baiwala	7	18	„ 50	Unassessed.		...
VI	Marina ..	3	18	„ 49	2 0 27	618—622	Molla
VII	Thumárd ...	not demarcated.			1 1 38	278	
		361	762	32 52			

Unlemarcated but assessed fields in Missan khat.

Name of place	No. of fields.	Area.	Owner.
		a. r. p.	
China in Kopti 4 and Marauwa 1	83 -86, 89 90—26	0 2 8	Kalwa of Tufna.
Simal in kopti 4	430 and 480	0 0 41	Setuwa of Tufna.
„	400—60	0 0 29	Tuina Sanjayat.
„	461—475	0 3 32	Mangtár Sanjayat.
„	476, 481—86	0 3 20	Bageh and of Mangtár.
„	477—70	0 0 27	Kaoya of Mangtár.
„	487—99	1 0 30	Dila of Mangtár.
Sayadhár Kopti 4.	85--86	0 0 34	Dilya of Mangtár.
„	87—88	0 0 36	Dani of Mangtár.
„	90—91	0 0 18	Darma of Mangtár.
„	93—95	0 1 1	Kaulo of Koti.
„	96—100	0 1 37	Bagchaud of Koti
„	101—02	0 0 11	Sangtu of Koti.
Morai Kopti 3.	10—12	0 0 10	Kaoya of Mangtár.
„	13	0 0 8	Salya of Koti.
„	14	0 0 12	Nurma of Koti.
„	15—18	0 0 7	Dilya of Koti.
„	19	0 0 10	Ramchand of Mangtár.
„	20	0 0 18	Ditya of Mangtár.
„	21—23	0 0 31	Dilya and Kaoyá of Mangtár.
Chonthina Thona 3.	9	0 0 18	Kaoya of Mangtár.
Siggár Marauwa 1	378 - 82	0 1 2	..
Jagra	26	0 0 16	Ratiya of Tuina.
„	27	0 0 7	Dani of Tuina.
Jogta *Chátra* 1.	1390—92	0 1 16	Koti Sanjayat.
	Total ...	7 0 5	

Exchanged for No 737 Jokla and No 2536, 2570- 73.

N B.—And these chaks have been entered on the maps and are numbered as above.

APPENDIX M.

List of rates current in the Deoban Range, Jaunsár Division, during 1887-88.

REVENUE.

Name of article.	Rate.	Per.	Remarks.
	Rs. a. p.		
Standing trees.—			
Pines ... 6′—9′ in girth;	5 0 0	Each	As advertised in the Government Gazette.
Ditto ... over 9′ „ ..	7 0 0	„	
Firs and horse chestnut 6′—9′ „ ...	2 0 0	„	
Ditto ditto ... over 9′ „	3 0 0	„	
Cypress ... 3′—6′ „ ...	3 0 0	„	
Ditto ... 6′—9′ „ ...	4 0 0	„	
Ditto ... over 9′ „ ..	7 0 0	„	
Oaks ... 3′—6′ „ ...	1 0 0	„	
Ditto ... 6′—9′ „ ...	2 0 0	„	
Haldu and Bakli ... 3′—6′ „ ...	4 0 0	„	
Ditto ... 6′—9′ „ ...	6 0 0	„	
Ditto ... over 9′ „ ...	9 0 0	„	
Gosam ... 3′—6′ „ ...	5 0 0	„	
Ditto ... 6′—9′ „ ...	7 0 0	„	
Ditto ... over 9′ „ ...	10 0 0	„	
Sál ... 6′ „ ...	6 0 0	„	Rate fixed by Divisional officer.
Ditto ... 7′ „ ...	7 0 0	„	
Ditto ... 8′ „ ...	8 0 0	„	
Sain ... 6′—9′ „ ...	10 0 0	„	As advertised in the Government Gazette.
Shisham ... 4′ „ ...	4 0 0	„	Rate fixed by Divisional officer.
Ditto ... 4′—6′ „ ..	5 0 0	„	
Ditto ... over 6′ „ .	6 0 0	„	
Deodár ... under 6′ „ ...	2 0 0	„	Rates at which standing deodár can be sold to villagers for their own use. No more than three trees to be sold to any one khat in one year, and the trees to be given, as a rule, from second class forests remote from Chakráta.
Ditto ... 6′—7 „ ..	3 0 0	„	
Ditto ... 7′—8′ „ .	4 0 0	„	
Ditto ... 8′—9′ „ ...	6 0 0	„	
Ditto ... 9′–10′ „ ..	8 0 0	„	
Ditto ... 10′–11′ „ ..	10 0 0	„	
Ditto .. 11′–12′ „ ...	12 0 0	„	
Ditto ... over 12′ „ ..	14 0 0	„	
Timber.—			
Deodár karis, 1st class ..	1 6 0	c. f.	On indent from Military Works R. 1-12.
Ditto do. 2nd „	1 0 0	„	
length. diameter.			
Ditto ballis ... 45′—6″ at tip ..	22 0 0	Each	Rate as charged to the Sappers and Miners, Roorkee.
Ditto do. ... 35′—6″ „ ..	18 0 0	„	
Ditto do. ... 30′—4″ „ ...	8 0 0	„	
Ditto do. ... 24′—4″ „ ..	7 0 0	„	
Ditto do. ... 22′—7″ „ ...	14 0 0	„	

EXPENDITURE.

Description of work.	*Rate.* From.	*Rate.* To.	Per.	Remarks.
	Rs. a. p.	Rs. a. p.		
Felling trees.—				
Deodár green .	0 6 0	...	tree 6′—10′ in girth.	
Ditto do. ...	0 8 0	...	„ 10′—14′ „	
Ditto do. ..	0 10 0	...	„ 14′—18′ „	
Ditto do.	0 12 0	...	„ over 18′ „	
Ditto dry	0 4 0	...	tree.	
Rai	0 4 0	...	„ over 18′ in diameter.	
Logging	0 3 0	...	log.	
Timber.—				
Sawing deodár, pine and fir scantling	0 0 6	..	sup. foot ..	Includes felling and logging.
Ditto ditto shingles 2 to 3′ x 6″ x ¼″	0 0 4	...	„	
Ditto Oak scantling ..	0 0 8	...	„	
Carriage of scantling containing 3 c. ft. or less and not over 13′ long.	0 0 4	...	cubic ft. per mile.	
Ditto ditto but from 13′-15′ long,	0 0 5	...	„	
Ditto ditto over 15′ „ ...	0 0 6	...	„	
Ditto of scantling containing from 3 to 6 cubic feet.	0 0 6	...	„	
Ditto of scantling containing from 6 to 8 cubic feet.	0 0 8	...	„	
Fuel.—				
Felling, splitting and stacking oak each piece being 2′ long.	2 0 0	...	100 stacked c. ft.	
Ditto fir ditto ...	1 12 0	...	„ ..	Rate just reduced from Rs. 2.
Carriage of oak fuel by mules and ponies,	1 6 0	...	100 stacked c. ft. per mile.	
Ditto fir ditto ...	1 2 0	...	„	
Stacking fuel inside the fuel shed	0 3 0	..	100 stacked c. ft.	
Ditto outside ditto . .	0 2 6	...	„	
Charcoal.—				
Making charcoal	0 1 6	...	cubic foot .	Or 6 ans. per maund.
Carrying do.	1 8 0	...	100 cubic ft. per mile.	
Buildings.—				
Daily labor, carpenters	0 8 0	0 10 0	day.	
Ditto masons	0 6 0	0 9 0	„	
Ditto blacksmiths	0 6 0	0 8 0	„	
Ditto coolies	0 3 0	0 5 0	„	Usual rates 4 as.
Collecting building stones ...	3 0 0	4 0 0	100 c. ft. ...	Includes digging, but at Mundali the rate is Rs 4-8-0.
Mud and stone masonry	2 0 0	3 8 0	„	
Rubble masonry	1 8 0	2 8 0	„	
Pukka do. (lime)	5 0 0	6 0 0	„	
White-washing	0 3 0	0 4 0	100 sup. feet.	
Pukka plaster	2 0 0	3 0 0	„	

List of rates current in the Deoban Range, Jaunsár Division, during, 1887-88—(continued).

REVENUE.

Name of article.		Rate.			Per.	Remarks.
	length, diameter.	Rs.	a.	p.		
Deodár ballis	22′—3″ at tip	3	0	0	Each	Rate as charged to the Sappers and Miners, Roorkee.
Ditto do.	17′—5″ „	6	0	0	„	
Ditto do.	28′—7″ through,	11	0	0	„	
Ditto do.	8′ 4″—6″ „	8	0	0	„	
Ditto do.	27′—6″ „	8	8	0	„	
Ditto do.	25′—8″ „	7	0	0	„	
Ditto do.	21′—4″ „	3	0	0	„	
Ditto do.	20′—6″ „	6	0	0	„	
Ditto do.	18′—6″ „	5	0	0	„	
Ditto do.	18′—3″ „	2	8	0	„	
Ditto do.	18′—10″ „	12	0	0	„	
Ditto do.	15′—6″ „	4	0	0	„	
Ditto do.	15′ 4″—6″ „	4	0	0	„	
Ditto do.	15′—3″ „	3	0	0	„	
Ditto do.	10′—4″ „	1	8	0	„	
Ditto do.	9′—6″ „	2	8	0	„	
Ditto do.	9′—3″ „	1	0	0	„	
Ditto planks	10′ × 12″ × 1½″	1	8	0	„	
Ditto do.	13′ × 6″ × 1″, 10′ × 12″ × 1″, 10′ × 10″ × 1½, 10′ × 10″ × 1″, 10′ × 8′ × 1½″.	1	6	0	„	
Ditto do.	9′ × 10″ or 12″ × 1″ or 1½″,	1	4	0	„	
Ditto do.	8′ × 10″ or 12″ × 1″ or 1½″,	1	0	0	„	
Ditto do.	7′ × 10″ or 12″ × 1″ or 1½″,	0	14	0	„	
Ditto do.	6′ × 10″ or 12″ × 1″ or 1½″,	0	10	0	„	
Ditto do.	5′ × 10″ or 12″ × 1″ or 1½″,	1	8	0	„	
Ditto do.	I class	1	8	0	„	
Ditto do.	II class	1	0	0	„	
Ditto shingles		0	3	0	„	
Kail scantling	I class	1	4	0	cubic feet.	
Ditto do.	II „	0	12	0	„	
Ditto planks	I „	1	4	0	each.	
Ditto do.	II „	0	12	0	„	
Rai karis	I „	1	0	0	cubic feet.	
Ditto do.	II „	0	8	0	„	
Ditto planks	11′ × 12″ × 1½″	1	6	0	each.	
Ditto do.	6½ × 12″ × 1½″	1	0	6	„	
Ditto do.	10′ × 10″ or 12″ × 1″	1	0	0	„	
Ditto do.	I class	1	0	0	„	
Ditto do.	II „	0	8	0	„	
Ditto ballis	35′ long, 20″ mean girth.	0	12	0	cubic feet.	
Kokat karis	11′ × 6″ × 5″	7	8	0	score.	
Ditto ballas	25′ long 2′—6″ girth.	20	0	0	„	

EXPENDITURE.

Description of works.	Rate. From.			Rate. To.			Per.	Remarks.
	Rs.	a.	p.	Rs.	a.	p.		
Kucha plaster (mud)	0	12	0	1	4	0	100 sup feet.	
Tarring iron roofing	5	0	0				„	
Shingle roofing	4	8	0				„	
Iron sheeting	15	0	0	20	0	0	„	
Pukka flooring	8	0	0	10	0	0	100 cubic feet.	
Plastering with lime and surkhi	1	0	0				100 sup. feet.	
Digging, cleaning and washing bajri	6	0	0	8	0	0	100 cubic feet.	
Digging and levelling sites	0	4	0	0	8	0	„	
Painting	3	0	0				„	
Lime-burning fuel not supplied	16	0	0				100 cubic feet.	
Ditto cut fuel supplied	10	0	0				„	
Burning surkhi	20	0	0				„	
Carriage of lime per mile	2	8	0				„	
Ditto bajri ditto	3	2	0				„	
From Executive Engineer lime	45	0	0				„	
Ditto ditto surkhi	37	0	0				„	
Roads—								
Earthwork	2	0	0	2	8	0	1,000 cubic feet.	
Bajri	4	0	0	6	0	0	„	
Ordinary rock	8	0	0				„	
Blasting hard rock	12	0	0				„	Includes cost of powder.
Ditto	0	4	0				running foot.	
Making road two feet wide	0	6	0	0	8	0	chain.	
Ditto three ditto	1	0	0	2	0	0	„	
Retaining walls, rubble masonry	1	8	0	2	0	0	100 cubic feet.	
Removing stumps and trees	0	4	0				each.	
Metalling 3′ broad and 6″ deep	1	8	0	2	0	0	chain	Includes breaking the stones.
Ditto 4′ ditto 9″ „	2	8	0	4	0	0	„	
Collecting stones for metalling	2	0	0				100 cubic feet.	
Breaking ditto ditto	5	8	0				1,000 „	
Mile stone pillars	0	8	0				each.	
Repairing roads	0	1	0	0	4	0	chain.	
Plantations—								
Collecting seed deodár	0	4	0				seer.	
Ditto pines	0	5	0				„	
Ditto firs	0	5	0	0	6	0	„	
Ditto cypress	0	13	0				„	
Ditto burâns and box	0	3	0				„	
Ditto maples	0	3	0				„	
Ditto poplar	0	1	0					
Ditto acorns	2	8	0				maund.	
Ditto horse-chestnut	1	4	0					

Ditto do ... 20′ long 2″ girth,	10	0	0	„	„	
Ditto balks 18′ long 1′—3″ „	3	0	0	„	„	
Ditto do 15′ „ 1′ „	2	0	0	„	„	
Ditto tors 15′ „ 2 „	4	8	0	„	„	At Kalsa.
Ditto do 12′ „ 1′—6″ „	2	4	0	„	„	
Ditto kurwas . 10′ „ 9″ „	1	0	0	„	„	
Ditto tool handles	0	6	0	„	„	
Ditto bed posts .	0	0	6	each	„	
Ditto bed steads	0	4	0	„		
Banghy of dhaman wood .	0	1	0	„		
Haldu wood	6	0	0	cart-load		
Sticks .	0	1	0	each	.	At Matkangra and Mohna
uel—						
Oak cut up into two feet lengths	24	0	0	100 stacked c.ft.,		At Karbar shed to Commissariat
Ditto ditto ditto .	26	0	0	„	„	„ Parade ditto ditto
Fir ditto ditto .	18	0	0	„	„	„ Karbar ditto ditto
Ditto ditto ditto	20	0	0	„	„	„ Parade ditto ditto
Oak ditto ditto	15	0	0	„	„	At Karbar for bazár sales.
Fir ditto ditto .	12	8	0	„	„	
Inferior woods, burâns, bad bân, &c	10	0	0	„	„	
Oak at Kurwa	10	0	0	„	„	For Military Works and Brewery
Oak	2	0	0	„		Cut up by Military Works.
Kokat fuel	2	0	0	„		
Dry khar, bakli and sâl .	1	12	0	„		Removed by purchasers at Kalsa.
Dry kokat and fuel	1	10	8	„		
Head-loads	0	0	6	load .		
Charcoal—						
At the Karbar shed ...	0	4	0	cubic feet		
At Kurwa	0	3	0	„	.	Delivered at kiln on cart-road made by purchasers.
At Kalsa ...	20	0	0	100 mds.		
Bamboos—						
At Kalsa ...	0	4	0	score		
Rungals .	0	4	0	hundred	.	The right to cut rungâls is now sold by auction.
Grass—						
Thatching pulas	0	10	0	thousand	.	
Fodder grass .. .	0	0	6	head load		
Grazing—						
Elephants	0	8	0	day		
Camels .	0	8	0	month	...	Or one anna a day
Buffaloes	0	8	0	annum	...	Gújars' buffaloes Re 1-8 per annum, *vide* new rules of 4th August, 1886.
Cows and bullocks ..	0	4	0	„		
Mules and ponies ..	0	2	0	„		
Sheep and goats	0	1	0	„		
Right to graze in Kâlsi forest .	15	0	0	month ..		Paid by Commissariat.

Preparing nurseries .	0	8	0	0 12 0	bed of square feet.
Digging lines 1′ broad for sowing ..	0	1	3	0 1 6	cham
Clearing patches of jungle 10 × 10′ ..				...	„
And digging 5 small pits 1′ × 1′ × 1′	0	1	6		each.
Digging pits 2′ × 1′ × ⅔′	0	8	0	0 13 0	hundred.
Ditto 10′ × 1′ × 1′	0	12	0	1 0 0	„
Ditto 2′ + 2′ × 3′	1	8	0	1 12 0	„
Ditto 3 × 3′ × 3′	0	1	0		each
Filling pits with mould .	0	6	0		hundred.
Sowing pits .	0	1	6		„
Planting up pits	0	1	3	0 2 0	„
Manure for forest garden	1	4	0		100 cubic feet.
Carriage of manure from Morrow's Neck,	0	1	0		cubic foot.
Making grass cowls for protecting young plants.	0	5	0	...	hundred.
Making numbered wooden pillar posts	4	0	0		score
Subscription to Chakrata dispensary ...	10	0	0		month
Supply of provisions at Deoban ...	1	4	0	..	maund

APPENDIX M.

List of rates current in the Deccan Range, Jaunsar Division, during 1888-89—(concluded).

Revenue.							Expenditure.				
Name of article.	Rate.			Per	Remarks.		Description of work.	Rate.		Per	Remarks.
								From	To		
	Rs.	a.	p.					Rs a. p.	Rs. a. p.		
Miscellaneous—											
Bakli leaves	0	2	0	load ...	At Kalsi, now leased annually Berja=chiretta; Hanaraj=adiantum sp; kalijiri=seeds of Vernonia anthelmintica; bachta=dried rhizomes of Acorus calamus; atis=root of Aconitum heterophyllum kapur-kachri=root of Hedychium spicatum; kakra-singi=excrescences on leaves and petioles of Pistacia integerrima; Pelijiri=roots of Thalictrum Foliolosum or of Cissampelos Pareira.					
Dhaura ...	0	0	6	,,							
Limestone from river ...	1	4	0	100 cubic feet...							
Quarry stones ...	2	8	0	,,							
Earth and bajri ...	0	0	1	load ...							
Hanswaj and kalijiri ...	0	4	0	maund ...							
Bachh, atis, berja, kapur kachari, kakar-singi and pelijiri	0	8	0	,,							
Indarjau, harra, bahera and soala ..	0	2	0	,,							
Bati, chati and leaves	0	0	6	Head-load ...							
Land-rent—											
Shop at Morrow's Neck	12	8	0	Month.							
Five shops at Kalsi	0	8	0	Each per month,							
Four watermills on Jumna	1	0	0	,, ...							
A. r p.											
Field near Jumna bridge, Kálsi, 0 1 11	3	0	0	Year ...	Lachman Das.						
Field at Kálsi, khat Bunáhil .. 1 1 3	2	0	0	,, ...	Rup Chand and others.						
Ditto ditto Amlawa . 2 3 0	2	0	0		Gusain, Siyana of Bana, between pillars 27 and 28.						
Matkangra ... 0 2 0	3	1	0	Year ...	Abdul Ghafur, Overseer, Siyana of Sijla; part of this (Kawai) has been now given in exchange for fields at Kabátra to Jádi villagers.						
Darma (Jagota) ... 7 1 9	7	4	0								
Darma (ditto) ... 1 3 0	2	0	0	...	Matru, Siyána of Jadi.						
Ditto (ditto) .. 1 0 25	1	2	0	...	Ram Chand, Siyana of						
Thoda 0 2 19	1	0	0	...	Bangir, Gopálu of Jádi						
Siari (Sungra-ká-thát	...			...	Free grant to Beer Singh of Kousin, renewable yearly.						
Leguna (Kandi dhár) ..	...			...							
Kardli (Kaner) ... 1 0 20	1	0	0	...	Now given in exchange for fields at Obri and formed into a chak.						

APPENDIX N.

Table of distances from the Forest Chauki at Morrow's Neck, Chakráta.

Name of block	Number of compartment.	Distance in miles.	Road along which the distance has been taken
Kua*	...	12¼	*Vid* Mussoorie road
Singori* †	1	14	,, ditto
* †	2	13¾	,, ditto
Raura* †		8½	To rifle range 2 miles only.
Kurwa* †	1	8	*Vid* Cart road.
* †	2	8¼	,, ditto.
Kota* †		12	,, Kurwa.
Bandla*	...	6½	,, Koti and Hospital spur.
Juári ...	1	12¾	,, Bojia láni.
	2	12¼	,, ditto,
	3	12¼	,, Bodiar nála.
	4	11½	,, ditto.
	5	11¼	,, ditto.
Bodiár ..	1	10½	,, Bangia láni.
	2	11¼	,, ditto.
	3	11¼	,, Bodiar nála.
	4	11¼	,, Lowest path Remuwa.
	5	11½	,, Gánwa path.
	6	11¾	,, Bojia lani path.
	7	12¼	,, Ganwa.
Moila	1	12½	,, Bojia láni.
	2	13	,, ditto
	3	13¼	,, ditto
	4	12¼	,, Moila temple.
	5	12	,, ditto
	6	12½	,, Simla road.
	7	13¾	,, ditto
	8	13¼	,, ditto.
	9	11¼	,, Path from Mashak and Lokandi láni.
Missau ...	1	10¾	,, ditto.
	2	10¼	,, ditto.
	3	9¼	,, ditto,
	4	9½	,, Asmári and Thona láni
	5	9¼	,, Asmari for upper half compartment.
	6	9¾	,, Kanasar.
	7	8¼	,, ditto.
Chátri ...	1	9¾	,, ditto.
	2	10	,, ditto.
	3	9¼	,, Mangtár.
Kanásar ...	...	8¼	,, ditto
Kopti ...	1	8	,, Thona láni.
	2	8	,, ditto.
	3	7¼	,, ditto.
	4	7½	,, Missau road.
Asmári ...	1	8	,, Thona láni.
	2	9	,, ditto
	3	8½	,, ditto
Marauwa ..	1	7¾	,, Missau road.
	2	8	,, ditto.
	3	8¼	,, Fire line and old Simla road
	4	5¼	,, ditto
	5	6¼	,, Old Simla road.
Thona ...	1	7	,, Kanjatra lani.
	2	6	,, ditto.
	3	6	,, ditto.
	4	6¾	,, ditto.
Kutniár ...	1	6½	,, ditto.
	2	5¾	,, ditto.
Kanjátra	1	5½	,, ditto.
	2	5¾	,, ditto.
	3	6¼	,, ditto.
	4	6	,, ditto
	5	4¾	,, Kaunti and Kanjátra lánis,

Name of block.	Number of compartment.	Distance in miles.	Road along which the distance has been taken.
Jádi .	*1	4¼	*Vid* Simla road.
	*2	4	,, ditto
	*3	4¼	,, ditto.
	*4	4½	Upper part *vid* Jarna láni 3 miles
	*5	5½	Ditto J½ ,,
	*6	5¾	Ditto 3¾ ,,
	*7	6	Ditto.
	*8	6¼	Ditto.
	9	4	*Vid* Deoban.
Darna ...	*1	3½	,, Simla road.
	*2	4½	,, ditto.
	*3	4½	,, ditto.
	*4	4½	,, ditto
Matkángra	*1	2	,, ditto.
	*2	2¾	,, ditto
	*3	1	,, ditto
	*4	1¾	,, ditto.
	*5	1½	,, Deoban road.
Mohna .	*1	1½	,, Gona Kai.
	*2	2½	,, ditto.
	*3	3¼	,, ditto.
	4	4¼	
	5	4	
	*6	3¼	*Vid* Gona Kai.
	7	4	
	8	4¼	
	9	4½	
	10	4¾	
	11	4½	
	12	4¾	
	13	5	
	14	5¼	
Durání ...	1	6	*Vid* old Simla road.
	2	6	,, Lower Konain road.
	3	6¼	,, ditto.
	4	7¼	,, ditto.
	5	7¼	,, ditto.
	6	6	,, ditto.
Ekra ...	*1	10	,, Kandal
	*2	10¾	,, ditto.
	*3	10¾	,, ditto.
	*4	8½	,, ditto.
	*5	7 and 8¼	,, 7 miles for forest in Bodi gád.
	*6	9½	,, ditto.
Kulured ...	*1	9¾	,, ditto.
	*2	10¼	,, ditto.
	*3	10½	,, ditto.
	*4	Not wanted.	
	*5	10	,, Sewa láni and Kandal.
	*6	9¼	,, ditto.
Amlokrá .	*1	10¼	,, ditto.
	*2	11	,, ditto.
	*3	Not wanted.	
Dánda ..	*1	10¾	,, Kandál.
	*2	11¼	,, ditto.
	*3	11¾	,, ditto.
Hajáwa ...	1	9¼	,, Kandál or Deoban (about equal.)
	2	8¾	,, ditto.
	3	8¼	,, ditto.
	4	8	,, ditto.
	5	9	,, ditto.
	6	7¼	,, Kanawa
	7	8¼	,, Tons road.
	8	12	,, ditto

* Fuel from these compartments will not pass through Deoban

† To find the distance of these compartments from the Parade fuel shed deduct one and a half miles.

To find the distance of the other compartments from the Parade fuel shed add one and a half miles.

The distances given are subject to correction when the compartments are opened out by roads but, as a rule, they are rather under than over the real distances.

APPENDIX N.

Table of distances from the Forest Chauki at Morrow's Neck, Chakrâta—(concluded).

Name of block.	Number of compartment.	Distance in miles.	Road along which the distance has been taken.
Duliâna ...	1	11¼	*Vid* Pandâwa hut.
	2	11½	„ ditto.
	3	9¼	„ Gedi khad.
	4	Not required.	
Pandâwa ...	1	10	„ Pandâwa hut..
	2	10¼	„ ditto.
	3	10¾	„ ditto.
Rikta ..	1	10¼	„ ditto.
	2	11¼	„ ditto.
	3	11½	„ ditto.
Bajandra ...	1	8½	Lower Konain road.
	2	8½	ditto.
	3	9¼	ditto.
Leguna ..	1	11	*Vid* ditto.
	2	10¼	„ ditto
	3	10¼	„ Bageru lâni.
	4	10¼	„ ditto.
	5	9¼	„ ditto.
	6	9	„ ditto.
	7	9¾	Lower Konani road.
Konain ...	1	11	*Vid* Bageru lâni.
	2	10¼	„ ditto.
	3	11	„ ditto.
	4	11¾	„ ditto.
	5	11¾	„ ditto.
	6	11¾	„ ditto.
	7	11¾	„ ditto.
	8	12¾	„ ditto.

Name of block.	Number of compartment.	Distance in miles.	Road along which the distance has been taken.
Karâli ...	1	12½	*Vid* Bageru lâni.
	2	13	„ ditto.
	3	13½	„ ditto.
	4	14½	„ ditto.
Siâri ..	1	11½	„ Inangoi and Kaluri.
	2	11	„ ditto.
	3	10½	„ ditto.
	4	10½	„ ditto.
Gutu gad ...	1	11½	„ Tons road.
	2	11½	„ Bangula lâni.
	3	11½	„ Inangoi and Kaluri.
	4	12	„ ditto.
	5	11½	„ Bangula lâni.
	6	11½	„ ditto.
Bhujkoti ..	1	11¾	„ ditto.
	2	12½	„ ditto.
	3	12¾	„ ditto.
Pâni kalânal	1	15½	„ Konain and Bageru lâni.
	2	15½	„ ditto.
Karâmba ...	1	11¾	„ Bangula lâni.
	2	13	„ ditto.
	3	12½	„ ditto.
	4	13¾	„ ditto.
	5	14	„ ditto.
	6	15	„ ditto.

APPENDIX O.

Agreement of 5th of May, 1877, between the Commissariat and Forest Departments for the supply of wood for use of the troops at Chakrâta, sanctioned by the Commissary-General in his No. 221 of 22nd May, 1877.

1. An indent to be furnished by the Commissariat in February of each year, showing the requirements monthly during the ensuing year and an estimate of the probable lump demand for the year following

2. Wood to be made over monthly to the Commissariat from April to November and bi-monthly from December to March.

3. Transfer receipts for wood taken over during the month to be submitted by the 10th of the following month

4 Wood to be made over at the Forest Depôt, Morrow's Neck, and at a central depôt in Cantonments.

5. *The rate for wood to be fixed annually in March of each year, the rate for 1877-78 being Rs 14-1 per 100 cubic feet of fir and Rs 19-1 per 100 cubic feet of oak, or Rs. 45 per 100 maunds of fir and Rs 45-12 per 100 maunds of oak.

6. Wood to be made over by measurement, and the present measurements of 320 cubic feet of fir and 240 cubic feet of oak as equivalent to 100 maunds to continue until a final figure be arrived at with consent of both Departments, it being understood that, for the present, the Commissariat will credit to the Forest Department any surplus, and on the other hand the Forest Department will make good any deficiencies.

7. Wood to be taken over in lengths averaging 2 feet, the Commissariat recutting into shorter lengths as may be necessary

8 The Commissariat to give one year's notice from March in case they should wish to make other arrangements for the supply of wood, and similarly the Forest Department, should they wish to cease the supplies.

9 †A shed in cantonments to be built by the Forest Department at an approximate cost of Rs 5,000; this amount to be recovered from the Commissariat Department by an increase of the charge on the fuel spread over a period of four years from the 1st of April, 1878

10 The shed to be considered as belonging conjointly to both Departments.

11 The wood in the shed to be considered as belonging to the Forest Department until taken over by the Commissariat, provided only that when once placed in the shed, it is to be used only for supply to the Commissariat Department

12 Wood stacked in the shed to be used during the rains, say July, August, and September, and again in the winter months, January, February, and March; during the other months from open forest depôts

13 The shed to be filled by the Forest Department during April and May and again in October and November.

14 The shed to contain about 50,000 cubic feet of wood, or approximately 17,000 maunds

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* This rate was increased in 1884-85 and is now per 100 stacked cubic feet:—

At Morrow's neck: Oak Rs. 24, Fir Rs. 18.
At Parade ground „ „ 28 „ „ 20

† This shed was built at the Parade ground and a similar shed was built at Morrow's Neck on similar conditions, as sanctioned by Commissary-General's No. 4155, dated the 30th of April, 1879.

APPENDIX P.

Ring-countings made in the Deobun range (suppressed trees marked thus).*

No addition has been made to the number of rings actually counted, to allow for the early growth of the trees.

Name of block.	Number of stump.	Aspect.	Number of rings on radius of inches											Number of rings from 0"–12"	Remarks
			0—2	2—4	4—6	6—8	8—10	10—12	12—14	14—16	16—18	18—20	20—22		
								DEODÁR.							
	1	..	8	5	6	5	8	12	...	...	...	...	...	44	Average thickness of sapwood 2½ inches and of bark a little over half an inch.
	2	...	7	12	18	22	...	...	...	...	..	...	...	...	
	3	...	8	13	11	12	22	...	...	...	...	...	...	...	
	4	..	6	18	20	22	...	...	...	...	...	...	...	..	
	5	...	11	16	15	15	...	...	..	..	...	...	...	..	
	6	...	7	9	7	7	10	9	10	..	...	...	..	49	
	7	...	6	10	10	10	7	14	...	...	...	...	...	57	
	8	...	11	10	15	10	14	11	...	...	...	..	...	71	
	9	...	8	9	10	11	14	7	...	...	...	...	...	59	
	10	...	10	10	10	10	9	...	...	..	...	...	...	...	
	11	..	10	7	9	8	8	8	...	...	...	...	...	50	
	12	..	11	10	14	10	14	..	...	...	...	...	...	...	
	13	.	8	8	9	9	10	15	...	...	...	...	..	59	
	14	.	7	8	7	9	11	12	...	...	...	...	...	54	
Bodiár ...	15	...	9	7	8	8	7	8	...	...	...	...	...	47	
	16	.	20	11	16	...	...	...	...	...	...	...	...	...	
	17	..	16	11	9	10	12	...	...	...	...	...	...	...	
	18	...	70	11	16	13	10	..	...	..	...	...	...	...	
	19	...	14	14	19	16	...	...	...	...	...	...	...	...	
	20	...	15	11	11	14	14	...	...	...	...	...	...	...	
	21	...	18	10	13	18	16	...	...	...	.	...	...	...	
	22	...	11	12	16	...	...	...	...	...	...	...	...	...	
	23	..	10	11	13	...	...	...	...	...	...	...	..	...	
	24	...	15	22	19	...	...	...	...	...	...	..	...	...	
	25	...	12	18	...	...	...	...	...	...	...	...	...	...	
	26	...	14	7	7	7	10	...	...	...	...	...	...	...	
	27	...	11	18	16	10	14	...	...	...	...	...	...	...	
	28	.	11	11	15	26	12	..	...	...	...	...	...	...	
	29	.	10	7	16	21	13	...	...	...	...	...	...	...	
	30	..	11	11	16	15	16	...	...	...	...	...	...	...	
Average ...	...	...	10·8	11·1	12·6	13	12	10·7	10	...	...	...	...	70·2	
	1	...	10	6	7	9	9	10	7	17	15	10	10	51	Average thickness of sapwood 2½ inches and of bark a little over half an inch.
	2	...	5	8	12	17	11	8	10	10	28	...	..	61	
	3	...	9	9	20	13	36	19	..	.	...	...	...	106	
	4	...	15	9	12	12	21	15	22	..	...	...	...	84	
	5	..	9	8	9	11	16	13	35	27	...	...	...	66	
	6	...	12	9	12	...	...	...	...	...	...	...	...	..	
	7	...	16	10	11	8	13	24	..	...	..	...	...	82	
	8	..	13	8	10	15	15	12	12	11	...	..	...	73	
	9	...	13	6	7	7	9	18	13	24	5	4·2	11	60	
	10	...	22	11	10	8	9	10	10	...	...	...	...	70	
	11	...	13	11	12	9	9	8	...	...	...	...	...	62	
	12	...	11	16	24	...	...	...	...	..	...	...	...	...	
	13	..	8	6	5	10	10	9	10	..	...	...	...	48	
	14	.	9	7	6	6	6	8	17	7	...	...	...	42	
Miana ...	15	.	12	14	..	...	...	...	...	..	...	..	...	...	
	16	...	12	14	15	..	...	...	...	..	...	...	...	...	
	17	..	14	10	12	17	19	...	...	.	...	...	...	...	
	18	...	14	15	16	18	...	...	...	...	...	...	...	...	
	19	...	12	12	16	19	18	...	..	.	...	...	...	...	
	20	...	12	11	9	12	10	16	...	...		...	...	80	
	21	...	11	11	8	7	8	8	14	20	12	..	...	53	
	22	...	14	9	9	8	15	17	...	...	...	...	...	72	
	23	...	24	20	12	16	12	18	15	11	...	...	...	97	
	24	..	20	12	14	12	..	...	..	...	...	...	...	...	
	25	..	14	10	7	11	13	...	...	....	...	...	...	...	
	26	...	10	10	9	18	27	...	...	..	...	...	...	...	
	27	...	16	14	12	12	23	15	...	...	..	...	...	92	
	28	...	10	7	5	8	6	8	8	...	...	...	...	44	
	29	...	9	6	7	14	10	8	...	..	..	...	...	54	
	30	...	14	9	10	13	16	15	...	...	...	...	...	77	
Average ...	...	...	13·4	10·3	11·0	11·9	14·2	12·7	14·4	15·9	15	7?	11·5	73·5	
Kanáwar,	...	...	13	8	7	12	9	12	32	15	22	19	...	61	
	...	..	*26	41	8	10	13	9	5	14	11	...	...	107	
	...	...	12	9	13	11	18	38	17	13	10	11	...	101	
Average ...	...	...	17	19·3	9·3	11	13·3	19·7	18	14	14·3	15	...	89·6	

APPENDIX P.

Ring countings made in the Deoban range (suppressed trees marked thus)—(continued).*

Name of block.	Number of stump.	Aspect.	Number of rings on radius of inches												Number of rings from 0"–12"	Remarks.
			0–2	2–4	4–6	6–8	8–10	10–12	12–14	14–16	16–18	18–20	20–22			
									RAI.							
Kanjútra	1	N.-W	11	8	13	12	13	15	13	..	...	...	...		72	Nos. 1 to 17 from Preliminary Working Plan, Deoban Working Circle, by Sir D. Brandis.
	2	,,	8	10	12	16	21	18	...	..	..	...	...		85	
	3	,,	18	20	22	21	...	...	...	...	...	...			...	
	4	,,	10	12	16	21	...	...	...	..	...	...	...		...	
	5	,,	23	5	18	25	...	..	.	...	...	...	...		...	
	6	,,	13	19	28	...	..	...	...	..	...	...	...		...	
	7	,,	13	11	13	23	36	...	...	...	...	...	...		...	
	*8	,,	*15	28	28	36	32	...	...	...	...	...			..	
	9	N.	11	14	18	19	19	20	18	19	...	...	...		101	
	*10	,,	*7	20	27	26	25	10	...	...	...	...	...		124	
	11	,,	18	16	14	17	26	24	20	...	...	...	...		115	
	12	N.-W	17	20	20	10	15	12	19	..	...	.	...		103	
	*13	N. N.-E	20	28	22	..	...	...	..	...	...	...	...		...	
	14	,,	16	10	10	15	13	17	...	...	...	...	...		81	
	15	,,	18	9	9	19	18	17	...	...	...	...	...		85	
	16	,,	8	10	10	12	12	24	...	..	...	...	...		76	
	17	,,	12	8	17	21	20	25	...	...	...	...	...		103	
	*18 & 19	,,	17	11	16	28	47	40	14	...	...	...	..		159	Average of 18 and 19 by Mr. Hearle in 1882.
	20	.	15	10	6	21	23	42	30	...	...	...	...		117	
	21	..	13	12	13	19	26	10	17	13	.	...	...		93	20 to 24 by forest students in 1888.
	22	.	15	11	11	18	30	28	20	21	..	...			113	
	23	..	14	10	9	12	18	34	24	31	...	...	...		97	
	24	..	14	15	1·4	13	15	14	13	15	..	...	...		85	
	25 to 44	...	16·7	15·9	15·5	16·4	16·8	16·5	16·9	15·6	17·8	...	...		97·8	Average of 20 trees by Mr. Smythies. No. 45 by Mr Smythies.
	*45	..	10·9	15·5	18·5	19·6	350	405	...	..	...	...	.		140	
Average	...	...	15·0	14·8	15·8	18·9	21·3	20·3	19·8	15·6	17·8	..	...		100·1	
Hajáwa.	*1	...	20	15	11	23	30	29	58	35	..	...	...		128	
	2	...	23	19	19	11	25	20	39	30	..	...	...		117	
	*3	...	*26	22	20	25	30	51	24	...	..	..	...		180	
	4	...	26	15	10	21	22	12	47	25	98	48	...		106	
	5	...	18	14	12	15	20	31	34	..	...	...	..		119	
	6	...	22	16	17	10	16	21	28	24	.	...	...		102	
	7	...	24	19	12	16	25	19	37	...		...	...		115	
	*8	...	*19	19	22	20	22	18	26	32	...	...	..		129	
	9	...	23	21	12	24	29	15	29	...	...	...	.		126	Average of 10 and 11 by Mr. Hearle in 1882. Nos. 12 to 17 by forest students in 1883.
	10 & 11	. ...	19	12	19	25	26	20	30	45	...	..	...		127	
	12	...	9	8	6	8	11	16	20	27	17		...		68	
	13	...	11	9	10	13	13	13	32	..	.	..	...		69	
	*14	. .	*10	10	10	17	23	40	42		...	...	...		110	
	15	...	6	6	7	9	15	28	31	23	...	.	..		71	
	16	...	11	8	9	12	11	4	16	25	18	20	...		62	
	17	...	15	7	11	12	12	13	15	. .	..	.	...		70	
	18	N. E.	22	19	13	25	18	32	...	...	...	.	...		120	Nos. 18 to 25 by forest students in 1884. Elevation 8,500 feet.
	* 19	,,	30	19	16	25	42	..	..	...	.		...		...	
	20	,,	31	20	15	12	16	...	...	...	...	.	...		...	
	* 21	,,	12	15	30	33	36	...	..	..	...	...	...		.	
	22	,,	14	20	19	15	19	18	. .	...	...	.	...		105	
	23	,,	14	13	13	10	11	13	16	...	...	...	...		74	
	24	,,	14	16	11	11	16	...	..	...	...	.	...		...	
	25	,,	16	22	28	...	...	.	...	...	...		...		...	
	26	,,	12	14	18	34	...	...	...	...	..	...	...		...	
	27	,,	10	14	7	9	17	16	18	23	27	24	...		73	
	* 28	,,	28	20	26	31	22	29	22	29	...	...	...		162	
Average ...	...	...	18·2	15·4	15·4	18·6	21·7	22·6	20·7	20·2	21·2	26·5	...		111.9	
Thona ...	1	N.	9	8	9	15	22	21	..	...	...	..	...		84	
	2	,,	7	10	17	22	29	23	26	...	...		...		108	
	3	,,	14	15	20	21	29	.	.	...	...	...	...		...	
	* 4	,,	* 38	19	35	47		...	...		...		...		...	
	5	,,	22	12	10	11	21	...	..		...	...	...		...	
	6	,,	19	14	26	40	..			...	...	.	...		...	
	* 7	,,	* 20	37	24	35	...	...		...	.	...	...		...	
	8	,,	13	12	11	13	23	25	30	.	...	...	. .		97	
	* 9	,,	21	46	30	...	.	...	...	.	...	...	. .		...	
	10	,,	13	21	11	11	11	7	...	...	...	...	..		74	
	11	N. N. E.	12	9	10	9	13	17	..	...	...	. .	...		70	
	12	,,	15	20	24	...	...	...	...	...	...	...	...		...	
	*13	,,	21	25	30	...	...	...	...	...	...	...	.		..	

APPENDIX P.

Ring countings made in the Deoban range (suppressed trees marked thus)*—(continued).

Name of block.	Number of stump	Aspect	Number of rings on radius of inches												Number of rings from 0 –12"	Remarks.
			0—2	2—4	4—6	6—8	8—10	10—12	12—14	14—16	16—18	18—20	20—22			
								Rai—(*continued*)								
	*14	N N E	22	19	26										107	
	15	,,	25	12	10	10	19	31		.						
	*16	,,	20	37	25	17	26									
	*17	,,	28	27	28											
	18	,,	15	10	15	21										
	*19	,,	* 20	43	49											
	*20	,,	17	30	31	25			\							
	*21	,,	* 29	46	8											
	*22	,,	* 43	30	16											
	*23	,,	* 33	25	19	21	.						..			From 1 to 50 countings in the Preliminary Working Plan Deobán Working Circle by Sir D Brandis.
	*24	,,	15	14	28	30										
	*25	,,	* 25	17	21	31	18								.	
	26	,,	17	18	26			.					..			
	27	,,	17	15	22	31										
	28	,,	15	31												
	29	,,	18	13	29	24	30									
	* 30	,,	15	21	58											
	31	,,	12	14	24	25	24	20							116	
	32	,,	14	14	24	29										
	* 33	,,	23	18	10	40										
	34	N E	20	21	19	17	16	16							109	
	* 35	,,	* 25	26	36			...								
	* 36	,,	* 30	33	28	19										
Thona—(*concld.*)	37	,,	20	10	11	14	38	9							111	
	38	,,	12	14	22	40										
	39	,,	20	19	21	20	22									
	40	,,	20	14	16	22	27						.			
	* 41	,,	* 25	28	34	43				.						
	42	,,	15	19	26	38										
	* 43	,,	* 26	22	40											
	44	,,	16	13	20	30	20									
	*45	,,	13	18	31	32	32									
	*46	N N E	15	26	39											
	*47	,,	* 12	28	30	40							.			
	*48	,,	16	22	48											
	49	,,	13	10	23											
	50	,,	10	10	10	30							.			Average of two trees by Mr Hearle in 1882
	51 & 52	,,	19	14	11	11	9	17	30	36	38				79	
	53	N E	11	10	17	26	27	30							123	
	54	,,	9	9	10	9	11	15	18	23	38				63	
	*55	,,	10	24	40	34	25					..				Nos 53 to 62 by forest students in 1884 Elevation 8 500 feet.
	56	,,	9	7	17	18	24	31	20	..					106	
	57	,,	0	0	9	16	26	22	27	37					85	
	58	,,	10	11	13	20	21	21	41	.					96	
	59	,,	7	6	7	8	18	14	39	25	22				60	
	*60	,,	* 10	19	38	52	11	39							149	
	61	,,	9	8	8	22	48	13	18	30	.				108	
	62	,,	11	11	14	16	20	25	26		..		..		100	
Average		..	15 9	19 1	22 3	24 3	20 8	20 9	27 7	30 4	34				123 3	
Mohna	1 & 2		16	11	11	15	18	19	21	36					90	Average of two trees by Mr Hearle in 1882
	3		23	21	23	20	21	13	24						129	
	4		12	23	23	36	28									
	5		15	16	18	19	18	23	31	33					98	
	*6		* 24	20	19	22	33									Nos 3 to 9 by forest students in 1883
	*7		* 19	20	30	43	24									
	*8		* 15	16	12	27	35	38			.				143	
	9		20	23	23	21	15	16							118	
	10 to 40		17 1	14 3	12 5	13 4	12 5	13	13 7	11 3					81 8	
	* 41 to 53		20 5	24 2	21 8	19 2	21 7	16 8	18						130 2	Nos 10 to 53 by Mr Smythies.
Average		...	19 5	17 6	16 4	16 9	17 3	15 5	16 6	15 8					123 3	

APPENDIX P.

Ring countings made in the Deoban range (suppressed trees marked thus)*—(continued).

Name of block.	Number of stump	Aspect	Number of rings on radius of inches												Number of rings from 0"–12"	Remarks
			0—2	2—4	4—6	6—8	8—10	10—12	12—14	14—16	16—18	18—20	20—22			
							KAIL—(*concluded*).									
Kopti	1		14	14	17	15	14	17	15	16	17	14	19		91	Nos. 1 to 19 counted by forest students in 1885
	2		9	10	10	11	12	13	19	24	23	19	20		65	
	3	...	9	8	8	17	25	27	29	32	...	.	..		94	
	4		14	14	14	19	21	18	21	28	...				100	
	5		9	11	10	13	17	26	27	27	30				86	
	6		14	15	9	14	15	28	22	17					95	
	7	...	11	13	15	17	15	20	16	19	*15	19			91	
	8	.	17	18	5	8	9	13	20	36	...				70	
	9		15	10	9	11	12	15	16	21	25	22	...		72	
	10		10	12	8	15	27	29	30				...		101	
	11		8	10	8	10	16	16	17	21	18	20	21		68	
	12		10	11	16	20	19	21	38	...		..	.		97	
	13		12	11	14	14	18	20	30	...		..	..		89	
	14		11	11	17	23	21	30		...	...				113	
	*15		19	14	16	38	31	27	.		...	...	.		145	
	16	...	10	7	7	11	18	18	20	46		..			71	
	17	.	7	6	9	16	22	21	27	30	.				81	
	18	..	10	10	13	21	17	24	19	17					95	
	19	.	10	9	10	11	12	21	13	18	11	17	...		72	
	20	S W	15	8	15	19	23	17	28	...	...		...		97	Nos 20 to 39 by forest students in 1885
	21	N E.	12	10	12	12	23	19	38	36	...		...		88	
	22	„	6	5	7	8	9	12	16	14	17	12	17		47	
	*23	„	12	14	35	55	...				.	..				
	24	„	11	6	8	10	14	38	47	26	.	...	...		87	
	25	„	6	5	5	8	13	17	24	21	16	...			54	
	26	N	10	11	19	20	22	23	22	.		...	...		105	
	* 27	N W	14	15	22	21	20	35	30				...		136	
	28	N E	15	9	12	11	13	14	22	28	...		...		74	
	* 29	„	12	28	40	...							..			
	30	„	7	11	16	28	..						..			
	* 31	„	*12	11	24	28	34	28							136	
	32	„	12	11	13	14	19	15	32	34	...		...		84	
	33	„	9	12	10	16	17	19	24	24		...			88	
	34	„	12	8	6	9	14	22	30	29	.	...	.		71	
	35	S W	15	15	15	19	28	27	24	30			...		119	
	36	W	12	10	11	15	18	15	27	31		..			82	
	37	W	14	12	18	21	21	35	30	37	.	...			121	
	38	N W	14	12	18	15	16	22			.		.		97	
	39	S	11	12	12	18	23	33			..				109	
Average	..		11·5	11·3	13·6	17·1	18·8	21·5	25·3	26·5	19·1	19·3	19·2		93·8	
Kansar	*1		12	8	7	9	10	15	21	18	...		...		61	
							MORINDA									
Kanjátra	*1	N W	20	34	27			...	...	.	...	...	...	.		Nos 1 to 8 in preliminary Working Plan for Deoban Working Circle, by Sir D Brandis
	*2	„	27	25	24			...		...	.		...			
	*3	„	30	19	18	23		...	.	..	.	.	.			
	4	N N E	9	10	13	18	25	..			.	...	..		94	
	5	„	14	18	11	12	25				...					
	6	„	9	14	11	15	15	30	30							
	7	„	16	25	24	18	13						...			
	8	„	9	9	10	10	15	34		.			..		87	
	9 and 10	„	21	14	13	24	26	29		...	...	.	...		127	Average of two trees by Mr Hearle in 1882
Average ...	...	...	17·7	18·1	16·4	18	20·1	30·7	39	...			...		121	
Hajáwa,	*1	...	*48	17	21	28	6	8	11	7	6				128	Nos 1 to 4 by forest students in 1880
	2	...	26	15	13	15	15	24	20	13	15	91			108	
	3	...	22	14	9	13	19	14	25	9	25	33			91	
	4		17	16	12	19	13	19	21	14	25	41			90	
	*5		*22	15	16	20	44					...	...			
	6		12	13	10	11	13	17	18	30			.		76	Nos 6 to 10 by forest students in 1885
	*7	..	*21	20	31	33	35	29	...	...			...		169	
	*8		*35	32	33	27	33	24							184	
	*9		18	25	21	16	40					...				
	10	...	27	25	22	12	13	20	34	42		...	..		119	
	*11	N E	28	26	26	31	22	29	22	29		...	...		162	Nos 11 to 15 by forest students in 1884 Elevation 8,500 feet
	12	„	22	18	18	19	21		...	...		...	...			
	13	„	17	14	29				...		.		...			
	*14	N E	20	26	18	22	30	30	...						116	
	*15	„	24	19	24	30	46			..		...	..			
Average ..			23·9	19·6	20·2	21·1	24·8	21·4	21·5	20·5	18	31			131	

APPENDIX P.

Ring countings made in the Deobán range (suppressed trees marked thus)*—(concluded.)

Name of block.	Number of stump	Aspect.	Number of rings on radius of inches											Number of rings from 0"- 12"	Remarks.
			0—2	2—4	4—6	6—8	8—10	10—12	12—14	14—16	16—18	18—20	20—22		
						MORINDA—(*concluded*).									
Mohna...	1 to 98	...	15·3	13·4	12·7	13·8	14·4	14·4	15·3	14·6	12·7	..	..	84	
	* 92 to 111.	...	22·3	21·9	22·2	23·7	20 1	28 1	17·2	...	...	..	...	144 3	
Average	..	...	19·5	14·9	13·9	16·	15·9	15 5	15·5	14·6	12 7	...	...	92 7	
						KARSHU.									
Kopti ...	...	...	33	29	27	28	23	33	23	...	...	...	...	173	
Kanjátra,	...	W.	22	27	25	22	18	...	...	...	...	...	...	...	Preliminary Working Plan, Deobán Working Circle, by Sir D. Brandis.
	...	„	34	20	64	37	45	...		...	. .	...	...	...	
	. .	„	22	36	55	33	55	...	...	...	...	...	...	...	
	...	„	23	55	37	36	23	. .	...	...	...	...	...	...	
	. .	„	18	53	34	48	...	...	...	...	...	...	...	...	
Average ...	...	...	23·6	38 2	43	35·2	35·2	...	...	...	...	...	...	...	
Mohna...	...	...	38	44	36	20	...	...	...	...	...	...	. .	...	Ditto.
	...	...	46	22	19	21	...	...	...	...	...	...	. .	.	
	.	...	15	12	23	32	...		...	...	...	...	...	...	
	...	...	37	30	30	39	. .	...	...	...	.	...	...	.	
	.	...	27	32	42	.		.	...	...	...	...	...	...	
	. .	.	17	38	29	33	24	32	...	...	...	...	...	...	
	...		24	20	21	. .		.	...	. .	. .	...	...	...	
	...	...	27	30		..		...	...	...	...	...	...	...	
	...	...	21	26	45	40	. .	.	...	...	...	..	...	...	
	. .	.	35	12	18	23	28	...	...	...	...	...	...	...	
Average ...	...	...	28·7	26 7	29 2	31	26	32	...	...	. .	...	...	173·6	
						ROX.									
Jáh ...	1 & 2	...	18·5	27	34	40	40	...	...	...	...	...	...	...	Average of two stumps counted by Mr Hearle.

APPENDIX Q.

Reducing Factors (1) *Spruce* (Abies Smithiana).

	Number of trees	Girth	Height.	Cubic contents of stem.	Cubic contents of branches	Total cubic contents.	Cubic contents of ideal cylinder	Date of measurement.	Reducing factor
		Ft in	Feet	Cubic feet	Cubic feet	Cubic feet	Cubic feet		
	1	5 5	100	133 10	10	143 10	238 40	1880	
	1	5 9	90	141 80	11	154 80	241 80	,,	
	1	5 9	80	127 40	15	142 40	214 90	,,	
	1	5 8	100	116 50	24	140 50	200 90	1882	
	1	6 8	110	176·90	30	206 90	340 10	1883	
	1	5 0	100	818 41	14	132 41	198 90	1884	
	1	5 0	80	89·80	22	111 80	159 12	,,	
	1	5 2	100	105 69	16	121 69	212 40	,,	
	1	5 4	90	111 59	20	131 59	203 07	,,	
	1	5 4	90	112 00	14	188 00	208 07	,,	
	1	5 7	120	146 12	13 33	159 45	297 72	,,	
	1	5 7	80	103 53	9	112 53	214 48	,,	
	1	5 8	110	142 98	20	162 98	281 05	,,	
	1	5 8	100	123 21	9 34	112 55	255 50	,,	
	1	5 10	90	142 95	12	154 95	247 72	,,	
	1	5 10	70	111 63	18	129 63	189 56	,,	
	1	6 0	110	166 25	22	185 25	315 15	,,	
	1	6 2	90	154 82	15	170 82	272 34	,,	
Total	18	101 0	1 710	× 2398 58	× 295 67	× 2694 35	× 4336 38		
Average of 18 trees 18 24 in diameter		5 7	95	129 91	16 43	146 90	243·01		
	1	6 5	100	185 3	17	202 3	334 5	1880	
	1	6 7	100	148 9	5	148 3	352 2	,,	
	1	6 9	120	193 8	10	203 3	444 2	,,	
	1	6 10	100	181 7	17	198 7	379 3	,,	
	1	7 6	120	244 1	17	251 1	548 5	,,	
	1	7 9	110	202 4	10	212 4	536 8	,,	
	1	8 0	110	296 9	55	351 9	572 0	,,	
	1	8 4	130	375 2	27	402 2	738 5	,,	
	1	8 5	100	228 0	19	247 0	575 6	,,	
	1	8 6	120	327 10	27	354 1	704 5	,,	
	1	8 7	120	263 6	15	278 6	718 4	,,	
	1	9 5	140	437 7	33	470 7	1008 7	,,	
	1	9 8	110	259 0	21	280 0	835 1	,,	
	1	9 10	80	192 7	20	212 7	628 6	,,	
	1	10 8	120	348 1	40	388 1	1109 3	,,	
	1	11 6	145	686 14	51	737 14	1558 00		
	1	6 10	100	189 1	56	239 1	379 3	1882	
	1	7 4	110	231 7	97	208 7	480 6	,,	
	1	7 5	130	299 9	33 5	333 4	581 0	,,	
	1	7 7	140	317 2	46	363 2	654 2	,,	
	1	8 5	130	325 7	66 00	391 70	648 30	,,	
	1	6 5	110	207 5	32 00	239 50	308 00	1883	
	1	6 7	100	195 0	24 00	219 00	352 10	,,	
	1	6 11	100	197 3	21 00	218 30	388 70	,,	
	1	7 2	100	210 9	33 00	243 90	419 10	,,	
	1	7 3	100	250 1	64 00	314 10	427 10	,,	
	1	7 8	120	275 7	24 00	299 70	440 80	,,	
	1	6 6	90	136 72	21 08	157 80	302 58	1884	
	1	6 6	110	207 05	33 00	240 05	369 82	,,	
	1	6 10	130	249·59	22 00	271 59	483 08	,,	
	1	7 6	120	269 01	32 00	301 01	537 12	,,	
	1	8 0	120	260 86	10 00	270 86	611 16	,,	
	1	8 0	140	337 47	42 00	379 47	713 02	,,	
	1	7 1	110	267 28	18 66	285 94	448 42	1885	
	1	7 3	120	267 02	12 00	279 02	512 84	,,	
	1	7 6	100	205 92	6 66	212 58	457 00	,,	
	1	7 7	80	250·25	26 66	276 91	484 01	,,	
	1	7 8	100	288 73	36 00	324 73	620 83	,,	
	1	8 0	100	306 54	53 33	359 87	520 00	,,	
	1	8 0	130	347 10	22 00	369 10	676·00		
	1	8 1	120	407 55	33 33	440 88	637 06	,,	
	1	8 2	140	420 94	48 00	468 94	758 60	,,	
	1	8 5	100	371 67	26 66	398 33	575 57		
	1	8 10	130	420 42	66 66	487 08	824 72	,,	
	1	9 2	120	429 78	37 32	467 10	829 92	,,	
	1	9 7	130	517 01	47 66	564 67	890 63	,,	
	1	9 8	130	455 91	36 00	491 91	986 96	,,	
	1	9 11	110	450·19	34 66	484 85	875 10	,,	
	1	10 0	160	653 51	35 00	688 51	1200 00		
Total		× 302 7	5085	× 14,765 10	1525 18	16,290 34	30 593 05		
Average for 41 trees 24 in diameter		8 0	115	301 33	31 12	332 45	624 36		

APPENDIX Q.

Reducing Factors (2) *Morinda* (Abies Pindrow)—(concluded).

	Number of trees.	Girth.	Height.	Cubic contents of stem.	Cubic contents of branches.	Total cubic contents.	Cubic contents of ideal cylinder.	Date of measurement.	Reducing factor.
		Ft. in.	Feet.	Cubic feet.	Cubic feet.	Cubic feet.	Cubic feet		
	1	5 1	90	107·50	13·34	120·84	185·04	1884	
	1	5 3	80	98·90	10 00	108·90	179·10	1880	
	1	5 3	100	105·70	13·42	119·12	219·30	1884	
	1	5 4	80	95·00	10·00	105·00	184·90	1882	
	1	5 5	100	119·30	8·00	127·30	233·50	1884	
	1	5 6	100	119·90	47·00	166·90	245·70	1882	
	1	5 7	80	112·59	24·00	136 59	198·48	1884	
	1	5 7	110	143·30	6·00	149·30	272·91	„	
	1	5 8	100	121·90	24·00	145·90	260·90	1882	
	1	5 9	70	91·02	16·67	108·29	184 17	1884	
	1	5 9	80	132·90	15·00	147·90	214.90	1880	
	1	5 9	80	125·19	30·00	155·19	214·90	1885	
	1	5 10	90	126·30	9·00	135·30	248·80	1880	
	1	5 10	110	147·70	20·00	167·70	304·20	1882	
	1	5 10	110	160·00	6·70	172·70	304.20	1883	
	1	6 0	100	140·10	29·00	169·10	292·50	1882	
	1	6 2	80	152·40	3·00	155·40	247·10	1880	
	1	6 3	80	126·10	28·00	154·10	253·90	„	
Total ...	18	× 101 10	1640	2232·40	313.13	2545·53	× 4244·60		
Average for trees 16"—24" in diameter.		5 7	90	124·02	17·40	141.42	235·81		·60
	1	6 6	100	218·98	16·58	230·57	350·14	1885	
	1	6 7	110	160·90	22·00	182·90	387·10	1882	
	1	6 8	90	157·00	9·00	166·00	325·00	1880	
	1	6 8	110	189·90	20·00	209·90	397·30	1882	
	1	6 9	100	201 50	36·00	237·50	370·20	„	
	1	6 10	90	165 00	13·00	178 00	341·50	1880	
	1	7 3	110	200·00	7·00	207·00	469·20	„	
	1	7 3	120	263·90	25·00	288·90	512·50	„	
	1	7 5	110	251 00	5.00	256·00	491·70	„	
	1	7 5	110	252·30	45·00	297·30	491·70	1882	
	1	7 7	90	356·90	37·00	293·90	420·60	1880	
	1	7 7	120	282 50	15·60	298·10	565·70	1883	
	1	7 10	90	212·00	40·00	252·00	448·70	„	
	1	7 10	120	309·80	19·70	329·50	598·30	„	
	1	8 0	130	335·70	21·00	356·70	678·00	1880	
	1	8 5	110	315·60	18·00	333·60	633·10	„	
	1	8 6	110	322·01	24.00	346·01	645 73	1885	
	1	9 9	110	270·50	17·00	293·50	724·00	1880	
Total ...	18	× 34 1	1980	× 4308·29	× 390·89	4759·18	× 8844·07		
Average for trees over 24" in diameter.		7 5	105	242 08	21·72	264·40	491 33		·54

APPENDIX R.

Measurement of height of trees of various species in the Deoban Range by Forest Ranger Keshavanand.

Name of block.	Number of compartment.	Number of trees measured.	Diameter classes.						Number of trees measured.	Diameter classes.					
			12" to 18".	18" to 24".	24" to 30".	30" to 36".	36" to 42".	Over 42".		12" to 18".	18" to 24".	24" to 30".	30" to 36".	36" to 42".	Over 42".
			Deodár.							*Kail.*					
Bodiár ...	1	2	...	...	87	82	...	...	...	...	...	...	...	...	...
	2	3	...	...	101	...	104	...	...	...	...	...	...	...	...
	4	2	...	...	93	...	...	...	...	...	...	...	...	...	...
	5	2	...	...	...	103	...	...	1	...	...	97	...	...	...
Moila ...	8	...	..	..	...	...	...	...	1	...	...	124	...	...	...
	9	2	...	...	94	...	...	...	...	...	...	...	...	...	...
	1	1	...	...	...	109	...	...	...	...	...	...	...	...	...
	2	2	...	...	...	...	127	137	2	...	...	...	...	127	...
Miasau ...	3	2	...	...	115	108	...	...	2	...	103	147	...	...	...
	4	1	...	...	...	129	...	...	1	...	...	...	...	146	...
Kanásar ...	...	3	...	...	...	...	...	126	...	...	...	...	...	...	...
	1	1	...	...	...	...	...	132	...	...	...	...	...	...	...
Kopti ...	2	1	...	...	...	...	...	141	...	...	...	...	...	...	...
Asmári...	2	2	...	...	90	...	...	...	1	...	...	...	...	...	149
	1	2	...	...	...	95	...	...	2	...	...	...	101	...	119
Marauwa ...	2	1	...	...	80	...	...	...	2	...	...	...	113	101	...
	1	1	...	...	...	...	109	...	...	...	...	...	...	...	...
Kanjátra ...	3	2	...	...	93	...	116	...	...	...	...	...	...	...	...
	3	1	...	...	123	...	...	...	...	...	...	...	...	...	...
Dunúni...	4	2	...	...	...	...	99	...	...	...	...	...	103	...	...
Rikta ...	1	2	...	...	107	...	...	90	...	...	...	...	...	...	...
	1	2	...	...	...	...	113	130	...	...	...	...	...	...	...
Bajamára ...	2	1	...	...	91	...	...	...	2	...	...	107	105	...	...
	3	2	...	...	118	...	...	105	...	...	...	...	...	...	...
	3	1	...	...	...	127	...	...	...	...	...	...	...	...	...
Loguna ...	5	3	...	...	...	...	122	...	...	...	...	...	...	...	...
	1	4	...	...	106	108	105	...	...	...	...	...	...	...	...
	2	4	...	...	98	108	118	...	...	...	...	...	...	...	...
	4	1	...	...	...	120	...	...	1	...	...	101	...	...	...
Kousin...	5	2	...	...	87	114	...	...	2	...	...	99	101	...	...
	6	1	...	...	...	...	136	...	1	...	...	...	117	...	...
	7	2	...	...	109	...	...	...	2	...	...	107	111	...	...
	8	2	...	...	88	..	94	...	2	...	...	98	106	...	...
	1	2	...	...	102	93	...	...	...	...	...	...	...	...	...
	2	2	...	...	107	121	...	...	2	...	...	105	107	...	...
Karuli ...	3	3	...	...	...	120	120	...	3	...	...	...	...	119	122
	4	...	...	...	...	...	...	...	1	...	...	...	...	111	...
Siári ...	2	2	...	...	95	93	...	...	...	...	...	...	...	...	...
	2	2	...	...	86	...	...	...	...	...	...	...	...	...	...
	3	2	...	...	120	128	...	...	1	...	...	...	108	...	...
Gutugád ...	4	2	...	...	94	...	...	...	...	...	...	...	...	...	...
	5	4	...	...	98	...	124	...	...	...	...	...	...	...	...
	2	2	...	...	...	151	...	143	...	...	...	...	...	...	...
Bhujkoti ...	3	2	...	...	...	...	146	156	...	...	...	...	...	...	...
Average ...	...	...	...	...	99	112	117	130	...	...	103	109	107	121	130
			Rai.							*Morinda.*					
	1	2	...	...	...	...	111	...	1	...	...	100	...	...	...
	2	4	...	...	114	127	134	...	...	...	...	...	...	...	...
Bodiár ...	4	3	...	...	...	...	117	...	...	...	...	...	...	...	...
	5	2	...	...	115	...	...	97	...	...	...	...	...	...	...
	6	3	...	...	...	...	109	141	...	...	...	...	...	...	...
	1	2	...	...	...	115	...	122	...	...	...	...	...	...	...
	4	4	...	105	...	107	153	140	...	...	...	...	...	...	...
Moila ...	5	3	...	...	...	116	...	...	...	...	...	...	...	...	...
	7	2	...	...	109	127	...	...	...	...	...	...	...	...	...
	8	2	...	...	...	...	159	...	...	...	...	...	...	...	...
	9	2	...	...	...	...	143	...	...	...	...	...	...	...	...
	1	2	...	...	...	110	...	124	...	...	...	...	...	...	...
Miasau...	3	1	...	...	...	...	111	...	...	...	...	...	...	...	...
	4	2	...	...	...	...	115	129	...	...	...	...	...	...	...
Kopti ...	1	3	...	...	...	...	157	147	...	...	...	...	...	...	...
	2	1	...	...	...	...	...	146	1	...	...	...	...	...	173
Asmári ...	1	4	...	...	99	117	...	...	...	...	...	...	...	...	...
	2	2	...	...	...	110	...	130	...	...	...	...	...	...	...
	3	5	...	...	...	...	141	165	...	...	...	...	...	...	...
	1	3	...	..	...	85	135	135	...	...	...	...	...	...	...
Thona ...	2	1	...	...	...	...	...	117	1	...	...	...	...	...	146
	3	4	...	...	...	...	...	147	...	...	...	...	...	...	...
	4	2	...	...	...	110	159	...	...	...	...	...	...	...	...
Kutuiár ...	1	4	...	...	86	94	113	...	...	...	...	...	...	...	...
	2	5	...	57	60	...	...	...	...	...	...	...	...	...	...

APPENDIX R.

Measurement of height of trees of various species in the Deoban Range by Forest Ranger Keshavanand—(continued).

Name of block	Number of compartment	Number of trees measured	Diameter classes: 12" to 18"	18" to 24"	24" to 30"	30" to 36"	36" to 42"	Over 42"	Number of trees measured	Diameter classes: 12" to 18"	18" to 24"	24" to 30"	30" to 36"	36" to 42"	Over 42"
			Rai							*Morinda*					
Kanjátra	1	2	.	...	127	192	124	133	1		...		118		.
	2	2				101	141	...					.		...
	3	2				99	126		1	..	...	...	106		..
	5	2		...	105	105		110	2	...	...	..	95		.
Jádi	4	2				86	103	...	...	...	...		...	...	..
	7	3	.			61	...		...	...	...		...		...
Mohna	8	1	..		...				1			103	...		..
	1	1	..		..	100									..
	1	2				135		125	..	..					...
Durání ...	2	2			..	145		151					..	..	.
	3	2		...		118		...			...		...	...	..
	5	2	.	.		113	117	..	2	...		82	97		...
	6	2		.			130	121	1			...	..		112
Dullana	1	1		..			...	124	1						118
	2	2			120	114			3			76	83		184
Pandáwa	1	2						130	1			..		184	...
	2	2		...			144								...
	1	1		...		131					..	...	...	...	...
Bajamára	2	2	1	...			...	127			...				...
	3	2	...		.		125	128					..		. .
	3	1				.	136								...
Leguna	4								2		93		96		...
	5	1					...	164	2			94		126	
	4	1						130	1			117			.
Kunain	5	2				144									.
	6	2					135	150				.			
	2	2				112			...	...		..		...	
Sári	3	2		..		124	139	...	2				...	98	141
	4	3			112		141		2						138
	1	1				113	...		1			117			
Gutugál	2	2					93	175	1		...	114			
	3	2	...	...	...		112			..	..				
	4						.		1		.		110		
	1	2		...	...	118			1					135	
Bhujkoti	2	1		...	...		138		1	..				110	
	3		...		...		.		1			.	140	.	
Average	.			81	105	118	130	135			93	100	107	122	138
			Morn							*Ban*					
Kurwa ...	.	.		...					1	39					...
Bandla		...	...		..				4	26	32			..	
Kota					...				2	26	..				
	2	3			.	...	..		3	..		55	107		87
Inári ...	4	4	...		63				1	.	...	78	73	68	...
	5	3			94			112	3	..		49	65	..	.
Bodlár ...	6	1		...	.				1			64	...	..	.
	1	3				...	115	106	1		...		62	..	
Mota	3			...		..	..	...	2		61	67		..	.
	4	1	.			107			.		...	.	...	...	..
	7	.	...			..		123	4				85	98	105
Kanáser	1	.		.	..	...	...	...	2			.	60	84	
Maruwa	2	.		...			...	...	2	...				70	70
	2		...						3	...	...	...	76	82	76
Thona ...	3	1			..			142					..	...	...
	4	3		53			100					...	...	...	.
Kanjátra	1	1		40	...		..	..			...		...	..	.
	3	2		49	48	..	..		...						..
Jádi	2		..	...		...	...		1	..		..		...	61
	1	4	.	37	...	76				...	..	.	..	..	
Darna ...	2			...					3	..	65				69
	3								4		57		58		..
	2						...		3	..	56	67			. .
Matkúngra	3		.		...				4		43	69	68		.
	4	3			..	51		58	2			44	...	...	...
	5	4	...		60	58	67				.				...
	1	2	...		...	.	61	79	1					57	
	2	2		...	...	72					...	...			
Durání ...	3	1			...	93	.		2			88	73	...	.
	4	..		...	...		..		2		80	.		...	58
	6	2			.	..		99	...		...	..	..		.
Amlokri ..	1	2		..	48	..	74	...	1		..		69		
	2		..						4			81		89	...

APPENDIX R.

Measurement of height of trees of various species in the Deoban Range by Forest Ranger Keshavanand—(continued).

Name of block	Number of compartment.	Number of trees measured.	Diameter classes: 12" to 18"	18" to 24"	24" to 30"	30" to 36"	36" to 42"	Over 42"
			Morú—(concluded)					
Dánda	1	.		68			.	...
	2		...	.	..		...	..
Duhana	1	2		.			95	
	2	1	..	..	...			104
Pandáwa	1	1	.			112	..	
	2	1			.	108		.
	3	..					...	
Rajamára	2	1			...	85		..
Leguna	3				..			
Konain	5	1				101		
	6	2		79	98			..
karák	2	...				..		..
	4							...
Slári	2	1						96
	3	2		..		91	..	126
	4	1				70		
Gutugád	2	2			86		90	
	3	1					67	
	4		..	..	..			..
Bhujkoti	2	1			.		98	..
	3	2				80		
Average	..			54	71	86	85	104

Name of block	Number of compartment.	Number of trees measured.	Diameter classes: 12" to 18"	18" to 24"	24" to 30"	30" to 36"	36" to 42"	Over 42"
			Bán—(concluded)					
Dánda	1	4		75	81	...		
	2	4	..	62	75	.	...	..
Duhana	1	1	55			.	..	..
	2			..			...	.
Pandáwa	1		..	..	...			..
	2				.			.
	3	2	...		66			
Rajamára	2	1			.			86
Leguna	3	2			61	71		..
Konain	5							
	6		..		.			.
karák	2	2			86	64		..
	4	2		72	74			..
Slári	2							
	3		.	...				.
	4		.		...	.		
Gutugád	2							
	3	3		83		90	108	.
	4	1	.			65	..	
Bhujkoti	2	1	.				56	
	3	1						..
Average			59	62	69	74	79	78

Name of block	Number of compartment.	Number of trees measured.	Diameter classes: 12" to 18"	18" to 24"	24" to 30"	30" to 36"	36" to 42"	Over 42"
			Karshu					
Thoma	1	4		78	92			...
	2	2			55	69		.
Kutmári	1	3		60	65		..	
	2	4	.	36	55	41	..	
Kanyátra	2	2		60		70		.
	5	2	..		97	79	..	.
Jadi	7	5			72	62	70	.
	8	2		29		29		..
	9	4	.		76	82		..
Mohna	1	4		77	91	90	.	
Pandáwa	1	3			73	62		...
	2	3				56	80	
Rajamára	1	4		56	68			
Leguna	4	1					61	
	5	3			57		83	.
	6	4			70			71
Gutugád	1	2			55		63	
	5	1			48	...		
Bhujkoti	1	2		74	74			
Average				60	70	64	71	71
			Ayar					
Matkangra	2	1			..	37		
			Burúns.					
Duna	1	1				49		
	2	2		40	32		...	
	3	1			45			
Average				40	38	49		

APPENDIX R.

Measurement of height of trees of various species in the Deoban Range by Forest Ranger Keshavanand—(concld.)

Name of Block	Number of compartment.	Number of trees measured.	Diameter classes. 12" to 18"	18" to 24".	24" to 30".	30" to 36".	36" to 42".	Over 42".	Number of trees measured.	Diameter classes. 12" to 18".	18" to 24".	24" to 30".	30" to 36".	36" to 42".	Over 42".
			Sál.							*Sain.*					
Barabágh .	...	2	40	.	...	...	...	...	...	...	...	...	...	...	...
Haripur ...	..	15	46	58	73	...	...	.	2	51	...	...	...	...	...
Average ...	..	..	47	58	73	...	...	...	2	51	...	...	...	...	...
			Haldu.							*Kaim.*					
Pánjgáon .		1	...	...	62	...	...	...	1	41	...	...	.	. .	...
Haripur .		5	...	.	...	45	62	63	1	...	56	...	...	...	...
Average ...	...	..	.	...	62	45	62	63	...	41	56	...	...	...	. .
			Bakli.							*Goram*					
Pánjgáon ...	...	2	...	60	...	...	...	...	..	. .	...	...	...	...	. .
Haripur ...	...	21	49	55	64	...	...	...	8	40	45	50	52	...	...
Average ...		...	49	62	64	...	...	...	.	40	45	50	52	...	..
			Khair.							*Makna.*					
Haripur ...	...	1	34	...	...	...	...	...	2	35	...	...	...	...	...
			Kat-bhilawa.							*Jingan*					
Haripur ...	...	1	53	...	...	...	...	...	1	...	.	32	...	...	...
			Dhebri.							*Jamún.*					
Haripur ...	...	1	...	53	...	...	...	...	1	38	...	..	...	...	...

APPENDIX S.

List of the more common forest plants in the Deoban Range (exclusive of Kálsi).

[Vernacular names by Forest Ranger Keshvanand.]

Order	Scientific name.	Jaunsári name.		Time of flowering.	Locality
Ranunculaceæ	Clematis montana	Kauni	C	April	Mohna, &c.
	" barbellata		"	May	Matkangra, &c.
	" Buchananiana		"	September	Mohna, &c.
	Anemone, Ranunculus, Delphinium, Aquilegia and Thalictrum.		H		Anemone and Ranunculus cover most open slopes from 8 to 9,000′ in the spring.
	Aconitum heterophyllum	Atis	"	August	Above 8,000′.
Magnoliaceæ	Schizandra grandiflora	Banoi	C	May	7—10,000′.
Berberideæ	Berberis nepalensis	Khoru	S	April	In ravines 4—8,000′.
	" vulgaris	Chatroá	"		8—12,000′.
	" aristata	Kashmol	"		Common 6—10,000′.
	" Lycium	Chatroi	"		" 3—9,000′.
	" asiatica		"		
Fumariaceæ	Corydalis sp.		H		
Cruciferæ	Nasturtium officinale	Súswá	"		At Bodiár, &c.
	Numerous other species		"		
Violaceæ	Viola sp.	Banafsha	"		Very common.
Caryophylleæ	Silene, Cerastium and others		"		
Hypericineæ	Hypericum sp.		"		
Lineæ	Reinwardtia trigyna	Basant	S		
Geraniaceæ	Geranium, Oxalis and Impatiens		H	Rains	Saiah and elsewhere up to 6,000′.
Rutaceæ	Boerninghausenia albiflora		"	October	Common 4—8,000′.
	Zanthoxylum alatum	Timbur	S	June	" up to 6,000′.
	Skimmia Laureola	Kathur-chára	"	April	" 6—10,000′.
Simarubeæ	Picrasma quassioides	Karui	"	June	Rare near Khatwa and Sainj.
Meliaceæ	Cedrela serrata	Darlol	T	April	Damp ravines.
Ilicineæ	Ilex, dipyrena	Kanderu	"	"	Common 5—8,000′.
Celastrineæ	Euonymus, tingens	Bhambeli	"	"	" 6—10,000′.
	" fimbriatus	Angáo	"	May	" 8—10,000′.
	" echinatus		C	"	Creeping over rocks, &c., 7—10,000′.
	" pendulus	Bhambela	T	June	
	" Hamiltonianus		S	"	
Rhamneæ	Berchemia lineata	Angári	"	May	Common 4—8,000′.
	Rhamnus, purpureus		"	April	" 5—10,000′
	" triqueter	Katheru	"	July	" up to 4,000′
	" virgatus	Jhantar	"		Konain.
	" procumbens		"	May	Mohna, 7—8,000′
Ampelideæ	Vitis lanata		C	June	up to 4,000′
	" parvifolia		"		
	" himalayana		"		Common 7—9,000′; ascends the tallest trees.
	" obtecta		"	May	About 6,000′.
Sapindaceæ	Æsculus, indica	Kundar	T	"	Common near streams 7—10,000′.
	Acer, oblongum		"	April	In the lowest valleys.
	" cæsium	Kainju	"	"	Common 7—10,000′.
	" villosum	"	"	"	" "
	" caudatum	"	"	"	" "
	" pictum	Kainjli	"	"	" "
	Staphylea, Emodi	Chitra or nagdaun	S.	May	Rajamára at 8,000′
Subiaceæ	Salvia campanulata		C		Common 6—8,000′
	Meliosma, dilleniæfolia		"		" 4—8,000′.
	" pungens		"		" 3—5,000′
Anacardiaceæ	Rhus cotinus	Tóng	S	May	Common 3—5,000′
	" parviflora	Ninás	"	July	" at Chatri, &c , 2—5,000′
	" wallichii	Archoi	T		At Kawa &c.
	" semialata	Tibri	"	May	3—5,000′
	" punjabensis	"	S		2—6,000′
	" succedanea	"	T		"
	Pistacia integerrima	Kakroi	"		1,500′—6,000′, Chátri, Karáli.
Coriarieæ	Coriaria nepalensis	Massoori or Masroi	S		Common 3—6,000′.
Leguminosæ	Piptanthus nepalensis		"	April	Mohna 9,000′.
	Trifolium, Melilotus and Lotus		H		
	Indigofera sp.	Kathoi	S	May and June	Common, forming dense scrub up to 10,000 feet, especially I. Gerardiana

APPENDIX S

List of the more common forest plants in the Deoban Range (exclusive of Kalsi)—(continued)

Order	Scientific name	Jaunsári name		Time of flowering	Locality
Leguminosæ	Caragana brevispina	Árí	T	May	Konain, Lurh &c
	Astragalus trichocarpus		,,	April	Chakrata
	Lespedeza sericea		,,	August	8—8 000 at Durám on open grassy slopes
	Ougeinia dalbergioides	Sandan	T		Lower parts of chir forests (hátir
	Desmodium sp	Martoi	S		Common especially D tiliæfolium
Rosaceæ	Prunus Puddum	Paja	T	May	Konain Sootoh
	Padus	Jámnoi	,,	April	Common 7— 10 000
	Prinsepia utilis	Bhekkoi	S	March	On dry hillsides 4—8,000
	Spiræa vestita		,	August	kanjatre, &c
	,, Aruncus		,,	,	,,
	,, sorbifolia	Latkar	,	June	Konain &c
	,, bella		,,		Common 7 10 000
	,, canescens	Tákol chakroi	,,	May	,, 6—12 000
	Rubus paniculatus	Pandroi	,,	June	
	,, ulvens		,,	April	
	,, ellipticus			,	Yellow raspberry, 1 500 —6000
	,, macilentus		,,	,,	
	,, fruticosus		,,		Blackberry
	,, biflorus	Achhoi		May	
	,, lasiocarpus	Kala ánchhu			Common
	,, foliolosus		,,		
	,, rosæfolius			June	
	Fragaria vesca	Bhambe	H	April May	Strawberry very common
	Potentilla fruticosa		N		
	, other species		H		
	Rosa macrophylla	Bhaunra kujoi	S	May June	Common 6—10 000
	, Webbiana		,	,	
	, sericea		,	,,	, 9—13 000
	,, moschata	Kujoi			,, 5—10 000
	Pyrus Pashia	Kaint	T	April	, 8—8,000
	, lanata	Páhi	,		, 8—10,000
	Cratægus crenulata	Gingaru	S	,	Chakrata &c 3—8 000
	Cotoneaster bacillaris	Ruinsh	,	April May	Common
	,, acuminata				
	,, microphylla	Bhedda	,		,, 6—8 000
Saxifragaceæ	Saxifraga sp	Shitpar or Dhouk phulutá	H	April	Common on rocks
	Philadelphus coronarius		S	June	Rare Mohna &c
	Deutzia corymbosa	Bhujrei	,	May June	Common 6—10,000
	, staminea	Dahlochi	,,	,	5—9 000
	Ribes rubrum		,,	April	Mohna &c Red currant 8 000
Crassulaceæ	Sedum sp.		H	Rains	On rocks and trees
Droseraceæ	Drosera peltata			August	Frequent on grassy slopes up to 10,000
Lythraceæ	Punica Granatum	Danoi	T	May	Open ravines about 6 000
Onagraceæ	Fidlobium sp				
Umbelliferæ	Archangelica officinalis		,,	July August	Open grassy slopes on Tons road near Hajáwa
	Numerous other species		,,	Rains	
Araliaceæ	Aralia cachemirica	Akhota	H	August	Durám near fire line, 7—8,000
	Hedera Helix	Mithar	C	September	Common 6—10 000
Cornaceæ	Marlea begonisfolia	Bhut kainju	S	June	Darna at 4 000
	Cornus macrophylla	Kagshi	T		Common 6—8 000
	, oblonga		,,		
	,, capitata	Thanboi	,,	June	Common 4—7,000
Caprifoliaceæ	Viburnum cotinifolium	Bhatnoi	S	April	,, 6—10 000
	, stellulatum	Richh i	,,	June	
	, nervosum	Tirnoi		March & Ap	Common 9—10 000
	Abelia triflora		,	June	,, 6—10 000
	Lonicera angustifolia	Banchulu	,	April	,, 6—10 000
	, quinquelocularis	Taknoi	,,	,	5—10 000
	, alpigena		,,	May	Karamba peak at 10 000
	, orientalis	Taknoi	,		Towards Mundah 8,000
	Leycesteria formosa	Bhujnah	,,	May June	Mohna 8
Rubiaceæ	Randia tetrasperma	Bhedra	,,	May	About 4,000
	Hamiltonia suaveolens	Pakrai	,	January	Chir forests &c, 2—5 000
	Leptodermis lanceolata	Ditto	,	August	On road from Deoban to Chakrata.
	Rubia cordifolia		H C	Rains	Common up to 8,000
	Gallium sp	Majitha	H	,	Common

APPENDIX S.

List of the more common forest plants in the Deoban Range (exclusive of Kálsi)—(continued).

Order.	Scientific name.	Jaunsári name.		Time of flowering.	Locality
Valerianeæ	Valeriana Wallichii		H	April	Common.
Dipsaceæ	Dipsacus inermis		„	September	Abundant in damp shady ravines, 6—10,000′.
	Morina persica		„	June	On grassy slopes.
Compositæ	Aster, Anaphalis, Artemisia				
	Senecio, Ainsiea, Taraxacum				
	Lactuca and numerous others				
Campanulaceæ,	Codonopsis viridis		C	August	Mohna, &c.
	Campanula sp.		H	„	Common.
Ericaceæ	Pieris ovalifolia	Ayar	T	May	Common 5—8,000′.
	Rhododendron arboreum	Burans	„	April	„ „
Primulaceæ	Primula denticulata				7—13,000′: carpetting grassy slopes.
	Androsace sp.				On rocks &c.
Myrsineæ	Myrsine africana	Danwan	S		Common up to 8,000′.
Styraceæ	Symplocos crataegoides	Lodra	T		„ 3—7,000′.
	„ ramosissima		„		
Oleaceæ	Jasminum officinale	Chambeli	S	June	Common 7—9,000′.
	„ revolutum	Shunjai	„		„ „
	Syringa Emodi		„		Rare; one or two in Mohna, Kanjátra.
	Fraxinus floribunda		T		One tree believed to have been found in Lurli.
	Olea cuspidata	Kan	„		Dry hill-sides up to 6,000′, Chatri.
	Ligustrum nepalense	Kakurcha	S		Gutugád &c.
Asclepiadeæ	Cynanchum auriculatum		C	August	Open grassy slopes near Pandáwa.
Gentianaceæ	Crawfurdia japonica		„	„	Mohna near Deothát.
	Gentiana kurroo		H	„	Under rocks at Chakráta View.
Boragineæ	Myosotis and Cynoglossum		„	Rains	
Convolvulaceæ	Cuscuta reflexa	Saragbali	P	September	Hajáwa (Gedi khad). On Polygonum, &c.
Solanaceæ	Solanum sp.		„	Rains	
Scrophularineæ,	Verbascum Thapsus		H	„	Mohna, &c., 6—10,000′.
	Scrophularia himalensis		„	„	Common 6—9,000′.
	Pedicularis sp.		„	„	Grassy slopes, &c., common.
	Orobanche epithymum		P	July, August,	On roots of thyme.
Acanthaceæ	Strobilanthes alatus	Mashnoi	H	Rains	Common on sunny slopes 6—10,000′.
	„ Wallichii	Jánu	„	„	„ under high forest 8—11,000′.
Verbenaceæ	Phryma leptostachya		„	„	Missau.
	Verbena officinalis		„	„	
Labiatæ	Plectranthus sp.		S	August	Deoban, Pandáwa.
	Origanum, Thymus, Salvia and numerous others.		H		
Amarantaceæ	Deeringia celosioides		C	Rains	Common up to 5,000′.
	Cyathula sp.		H	„	Missau, &c., in grazed forests, 4—9000′.
Chenopodiaceæ	Chenopodium album		„	„	Wild and cultivated up to 12,000′.
Polygonaceæ	Polygonum sp.		„	„	Common.
	Rumex nepalensis		„	„	Common 4—9000′.
Laurineæ	Cinnamomum Tamala	Gurandra	T		Amlokri, 3—5,000,.
	Machilus odoratissima	Kaula	„		Common up to 8,000′.
	Phœbe lanceolata	Bhadroi	„		„ „ 6,000′.
	Litsæa zeylanica	Shurur	„		„ „ 7,000′.
Thymeleaceæ	Daphne cannabina	Dhak chamboi or sat pura.	S	April,	„ „ 5—7,000′.
	Wikstroemia canescens	Chamboi	„	Rains	„ „
Elæagnaceæ	Elæagnus umbellata	Ginroi	„		
	„ latifolia		„		
Loranthaceæ	Loranthus vestitus	Banda	P		On oaks 5—7,000′.
	Viscum album	Chulu ka banda,	„		On apricot trees, &c., fruit ripening in December.
	„ japonicum	Banda	„	May, & June,	On bán oak.

APPENDIX S.

List of the more common forest plants in the Deoban Range (exclusive of kálsi)—(concluded)

Order	Scientific name	Jaunsári name		Time of flowering	Locality
Santalaceæ	Osyris arborea		P		
Euphorbiaceæ	Euphorbia Royleana	Suru	S		On dry stony hills up to 4,000
	Sarcococca pruniformis	Tiliári	„		Common
	Buxus sempervirens	Spmsádu	T		Ravines in Jádi, Darma, and Matkángra
	Andrachne cordifolia	Bharton	S	July	Common
	Phyllanthus nepalensis	Anwin	T		Rare in chír forests
	Daphniphyllum himalayense	Batunda	„	April,	In Darma along the gád
	Securinega obovata		S		Common
Urticaceæ	Morus serrata	Kimu	T		Common from 4—8,000′
	Ficus Roxburghii	Timbol	„		„ up to 5,000
	„ scandens	Makhota	C		„ on rocks, &c
	Celtis australis	Kharik	T		Commonly planted for fodder
	Ulmus Wallichiana	Pimroi	„		Bhujkoti, &c, 3,500—10,000
Betulaceæ	Betula acuminata	Kath bhúj	„	April,	5— 10 000
	„ Bhojpattra	Bhúj	„		About 50 trees in Bajamára and Bhujkoti blocks
	Alnus nitida	Utash	„		In most places, not abundant
Salicineæ	Salix elegans	Bhausrola	S		Common 6—9,000′
	„ caprea		„		
	„ daphnoides		„		Common
	„ viminalis		„		
	Populus ciliata	Sharphara	T	April	Common 5—10,000
Cupuliferæ	Quercus semecarpifolia	Karshu	T	May	Common 8—10 000
	„ incana	Ban	„	March, Apl	„ 4—7,500
	„ dilatata	Moru	„	April	„ 7—8,000
	„ annulata	Bam	„	March	Moist ravines 3—5,000, Amlokri Raura, 5—7,000, moist ravines
	Carpinus vimnea	Shángri	„		Dandá block
	„ fagnea		„		
	Corylus colurna	Kapasi Bhotua Bádám	„	...	Common 7—10,000
Myricaceæ	Myrica sapida	Kaphal	„		Kurwa Bandla, &c, 3—6 000
Juglandeæ	Juglans regia	Akhor	„	February	Damp ravines 7—9,000
	Engelhardtia Colebrookiana	Mowá	„		Up to 6,000
Gnetaceæ	Ephedra vulgaris	Túi ganthá	S	June	Open rocky slopes from 8,000
Coniferæ	Pinus longifolia	Sarol	T		Forming pure forests 3—6,000
	„ excelsa	Chil	„		Abundant 6—8,000
	Cedrus Deodara	Deon Deodár	„	September	„ „ + but found also from 4 to 10,000
	Abies Smithiana	Rai	„	April	Abundant from 6,000
	„ Webbiana	Morinda	„	„	Rare one or two trees in Mohna
	„ Pindrow	Do	„	„	Abundant from 7 500
	Cupressus torulosa	Lecra	„	„	On limestone precipices, Moila, &c
	Taxus baccata	Thuniára	„	„	In dense fir forests 7—9,000
Gramineæ	Arundinaria falcata	Go ringáo	„		Abundant
	Thamnocalamus spathiflorus	Deo mingao	„	..	„
Aroideæ	Arisæma sp		H	Rains	
Scitamineæ	Zingiber sp		„	„	
	Hedychium spicatum		„		
Orchidaceæ	Numerous ground orchids		„	„	
Iridaceæ	Iris sp		„	June July	Open slopes 8—9,000′
Liliaceæ	Tulipa, Lilium, Asparagus		„	Rains.	
	Polygonatum, Smilax, Paris and Allium		„	„	
Commelynaceæ	Commelyna		„	„	
Filices	Adiantum, Onychium, Asplenium		„		
	Aspidium, Nephrodium, Polypodium, and Pteris.		„		
	Pteris aquilina	Barnoi	„		Abundant on open slopes facing north
Lycopodiaceæ	Selaginella		„		
Fungi	Tuber sp	Jhanda	„		Truffles under young deodar at kanásar, Konain, and elsewhere

In this list T stands for tree, S for shrub, C for climber or creeper, P for parasite, H for herb

No. $\frac{826F.}{868-9}$ OF 1888.

FROM

THE SECRETARY TO GOVERNMENT,

N.-W. PROVINCES AND OUDH,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,

REVENUE AND AGRICUTURAL DEPARTMENT (FORESTS).

Dated Allahabad, the 24th December, 1888.

SIR,

REVENUE DEPT. (FORESTS).

I AM directed to forward, for the information of His Excellency the Governor-General in Council, copy of a Resolution No. $\frac{823F.}{868-6}$ of this day's date, passing orders on the Working Plan for the Dooban Range, Jaunsár Forest Division, and to say that 36 copies of the Working Plan will be submitted as soon as the plan has been printed.

I have the honor to be,

SIR,

Your most obedient servant,

T. W. HOLDERNESS,

Secy. to Govt., N.-W. P. and Oudh.

BENGAL SECRETARIAT LIBRARY

No. $\frac{823F}{86b-6}$ OF 1888.

RESOLUTION.

REVENUE (FORESTS) DEPARTMENT.

Dated Allahabad, the 24th December, 1888.

READ—

(1) The Working Plan of the Deoban Range, Jaunsár Forest Division

(2) Letter from the Inspector-General of Forests to the Government of India, No. 845, dated 6th November, 1888.

OBSERVATIONS.—The working plan cited in the papers read above is for the forests of the Deoban range in Jaunsár Báwar adjoining the cantonment of Chakráta. The area comprised by these forests is only 46 square miles, of which three square miles are first class forests and 43 second class. The so-called "second class" forests are forests in which, though they have been declared "reserved" under the Forest Act, the neighbouring villages have been assigned extensive privileges which are believed to be essential to their well being, and which were taken into account and recorded at the last land-revenue settlement. Mr. Hearle, the author of the plan, has fully described the history and nature of these privileges, and has indicated the directions in which, from a Forest Officer's point of view, their further curtailment or regulation is ultimately desirable. This portion of the plan will be of much use to the District Officers of the pargana, as it summarises in a convenient form the arrangements which have been made in respect of these forests from time to time. But His Honor desires it to be distinctly understood that the general sanction which is now given to the working plan does not impair or alter the settlement of village grazing and other rights in the second class forests effected by the rules* of 1885. The closure of certain areas against grazing, for example, which Mr. Hearle recommends, will require, under Rule 6, the consent of the Superintendent of the Dún. The rule regarding the compulsory use of the saw, and the fine of two annas for each breach of the rule, which are mentioned in paragraphs 28 and 184, have been cancelled by G. O. No. $\frac{509F}{477-5}$, dated the 6th September, 1888. The question of limiting the number of cattle, goats, and sheep entitled to free grazing in the second class forests is in train of settlement.

*G O No 33F, dated 15th January, 1885

2. The portion of the plan which treats of the proposed lease by the Forest Department of an area of 1,585 acres of oak forest from the Cantonment Committee of Chakráta, and sketches the method on which this area would be worked for the fuel requirements of the cantonment, has been referred for consideration to the Cantonment Committee. It will rest with the Military authorities to determine whether the lease should be granted or not. Should they not wish to accept the proposal of the Forest Department, the programme of work suggested by Mr. Hearle may still prove useful to the Cantonment Committee in the management of these lands.

3. The general object of the plan is to supply timber and fuel to Chakráta, and His Honor sees no reason for doubting the opinion expressed by the Inspector-General of Forests that the actual and prospective demands of the cantonments can be fully met from the first and second class forests under the control of the Department in Jaunsár-Biwar. Mr. Hearle's proposals have been professionally approved, and the working plan is now provisionally sanctioned by Government for a term of 10 years. Sir Auckland Colvin, however, entirely agrees with the Inspector-General of Forests that so elaborate and costly a work was unnecessary, and that a simple plan of operations for the next 10 or 20 years would have fully met the requirements of the case. The over-elaboration of the working plans prepared in the School Circle during the last few years has repeatedly been remarked upon by this Government, and Sir Auckland Colvin is glad to find that the same view is accepted by the head of the Forest Department, who acts as the professional adviser to Provincial Governments in all matters touching the character and details of forest working plans. As no working plans of a similarly comprehensive character are now under preparation, it is unnecessary to dwell further upon the waste of time and money which are entailed by such needlessly elaborate compilations. But Sir Auckland Colvin would place on record his regret that sufficient attention should not have been paid in this and other cases to practical requirements, and to considerations of economy which ought to regulate the procedure of all departments of the administration.

T. W. HOLDERNESS,

Secy. to Govt., N.-W. P. and Oudh.

No. $\frac{824F.}{868-7}$.

Copy forwarded to the Inspector-General of Forests to the Government of India, for information.

No. $\frac{825F.}{868-8}$.

Copy also forwarded to the Conservator of Forests, School Circle, North-Western Provinces and Oudh, for information.

By order, &c.,

J. M. HOLMS,

Under-Secy. to Govt., N.-W. P. and Oudh.